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THE VEDIC MAGAZINE

सर्वेषामेव दानानां ब्रह्म दानं विशिष्यते । (मनु०)

Of all gifts that of Divine knowledge is the highest and noblest.

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STUDY OF MECHANICS FROM INDIAN ENGINEERING BOOKS.

(By Rao Sahib K. V. Vaze I. C. E.)

INTRODUCTION.

In Indian Engineering Literature I have not yet been able to find a text treating exclusively of Mechanics except यंत्राणव. However, references occur in Engineering texts dealing with mechanical contrivances by means of similies &c and the following notes are compiled from such references occurring in my studies.

In this world we always observe incessant changes taking place so that this world is compared with an ocean for these changes only. The power which causes these changes is called 'Energy.' The creation of this world or rather its manifestation is due to this Energy. In order that we may be cognisant of any thing it is necessary that the thing should impress our body in some way or other; and this impression is the work of Energy. Thus we can not know a thing which has not Energy in it and is thus unable to impress us. The widest impressions by Energy are called 'Space' and 'Time.' That we are cognisant of 'Space' by the extent of Energy is self-evident as 'Space' is the generalization or abstract of all extension. We are cognisant of 'Time' by the succession of the effects or works of Energy. The sense of touch is the instrument of knowing space, and thought is the instrument of knowing time. We may know time by the changes observed by the eye, but in a dark place or with eyes shut we know time by the

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number of successive changes occurring in our thoughts. This is the reason why we miscalculate time when we are busy or quite idle. When we are very busy the successive operations of thought are so few that we think that the time past is short, while when idle the successive operations are so many that we think that a long time has elapsed. The oldest instrument of measuring time is the changes in the sky and the division of time into years, seasons, months, fortnights, days, nights &c. is due to the recurrence of the changes in the sky in succession. The world is thus like a file of which each page denotes 'Space' and the succession of leaves 'Time.'

Western Engineers divide Energy into three classes *viz.*, (1) Physical Energy, (2) Chemical Energy and (3) Astrator Electrical Energy. Indian authors however divide Energy into six classes *viz.*, **इन्द्र, मित्र, वरुण, अग्नि, सुपर्ण** and **गरुत्मान्**,. What is known as 'Gravity' in English is called **इन्द्र**., Chemical affinity is called **वरुण**, Electrical attraction is called **मित्र**, light is called **अग्नि**, vegetable energy is called **सुपर्ण** and Animal Energy is called **गरुत्मान्** in Sanskrit Engineering. The Energy known as **सुपर्ण** is sometimes called **हारिद्रव** and that as **गरुत्मान्** is called **रक्तद्रव**.

Indian authors denote knowledge by a solid **घन** and in order to have complete knowledge of a solid it is necessary to have knowledge of its six sides and therefore complete knowledge is called **घनांत** or "solid knowledge" and is composed of six sides. **षडङ्ग, षड्दर्शनं** and such other words denote this complete knowledge. Of the above six Energies the first four are 'Passive' and the last two are 'Active' and this is denoted by the Accusative or **कर्म** case and Nominative **कर्ता** case in the following **मंत्र** counting them.

इन्द्रंमित्रंवरुणमग्निमाहुः ससुपर्णोगरुत्मान ॥

ऋग्वेदः

Indian authors classify all things into five classes according to the passivity of the thing. The most passive things are solids and are called **पृथ्वी** next to them come the Liquids **जल** the next is **वायु** gases, next comes **तेज** light and the last *i. e.*, the least passive thing is **आकाश**. In order to obtain work from these five elements Indian authors specify five **यंत्र** five **मंत्र** and five **तंत्र** which are defined as below.

मानवी पाशवांशक्तिस्तन्त्रमित्यभिधीयते ॥७।
दण्डैश्चक्रैश्चदन्तैश्चसरणिभ्रमकादिभिः ।
शक्तेः सवर्धकं किंवा चालकं यन्त्रमुच्यते ॥८॥
मन्त्रज्ञा ब्राह्मणाः पूर्वैजलवय्वादिस्तंभनैः ।
शक्तेरुत्पादनं चक्रुस्तन्मन्त्रमितिगद्यते ॥३॥

यन्त्रार्णव

The physical force exerted by men or animals is called **तंत्र**. The mechanical contrivance by which a force it multiplied or changed is called **यंत्र**. The production of new energy by the stoppage of water, wind &c., is called **मंत्र**.

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The difference in the meaning of these terms is to be explained as under:—

तंत्र. Things prepared by the application of this force are never exactly one like the other; there are always minor differences. **तंत्र** Energy gets tired, i. e., it can not work for indefinite time continually. A man or animal who uses this force is required to be trained to use it.

यंत्र. Things prepared by the application of this are generally similar, **यंत्र** never gets tired i. e., it works continually so long as the worker works. A person who uses this force ought to know its use and nothing further. In a **यंत्र** Power **सावित्री** and Work **सृष्टि** can be interchanged i. e., if one has **सावित्री** he can get **सृष्टि** or if one has **सृष्टि** he can get **सावित्री**.

मंत्र. This power once produced goes on until the state of things continues. This power knows no mercy and is never tired. One may stop its action but that means so much loss. No deviation is allowable with this method. In **मंत्र** you can not interchange **सृष्टि** and **सावित्री**, **सावित्री** will produce **सृष्टि** but **सृष्टि** can never produce **सावित्री**. It tolerates no mistakes.

In short the working power of **तंत्र** is small but it requires few appliances and the power is under perfect control and can give some work even with deficient means. The working power of **यंत्र** is great in proportion to the number of appliances available and if there be any thing deficient it can not give its full outturn. The working power of **मंत्र** is very great, its work is very accurate but the least defect in the appliances is fraught with great danger; it requires many appliances and would not work with any the slightest deficiency; the least mistake would work disasters with the **मंत्र**. Indian authors therefore specify that the application of a **मंत्र** should be rarely resorted to and when it is resorted to, the user must be very accurate, careful and well trained i. e., he must be able to keep his mind and body under perfect control.

In Indian Engineering works **तंत्र**, **यंत्र**, and **मंत्र** occur as under. The terms **स्वतंत्र**, **परतंत्र** and **सर्वकर्मस्वतंत्र** occurring in Indian Engineering texts denote the ability of the worker to do the thing with his own hands; thus a man who is able to do the work with his own hands is called **स्वतन्त्र** while one who has to depend upon others, hands is called **परतन्त्र**. An artizan who not only does his work but is able to prepare & repair his tools also is called **सर्वकर्मस्वतन्त्र**. A **ब्राह्मण** is not allowed to have anything done for him by others as that would spoil his **स्वतन्त्रता** and in order to keep his **स्वतन्त्रता** he is to live a simple life. A thing is called **सुयन्त्र** when the power employed is duly multiplied so as to be able to achieve the object in view. **दूरवीक्षणयन्त्र** is an instrument

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which magnifies distant objects sufficiently to make them properly visible मन्त्री, मन्त्रज्ञ is a man who is able to use unknown or unused powers in the world ; any sentence which tells how the invisible or unused power can be used is also called a मन्त्र and the desired effect is obtained not by the recitation of the मन्त्र but by acting or working as is laid down in it.

अज्ञेभ्यो ग्रन्थिनः श्रेष्ठा ग्रन्थिभ्यो धारिणस्तथा ।
धारिभ्यो ज्ञानिनः श्रेष्ठा ज्ञानिभ्यो व्यवसायिनः ॥

मनुस्मृति

Men who are able to read are better than those who are illiterate, men who know मन्त्र by heart are better than those who are able to read, men who know the meaning or object of the मन्त्र are better than those who are able to recite and men who are able to act or do as is specified in the मन्त्र are better than those who understand the meaning or object.

स्थाणुरयं भारहारः किलाभूदधीत्य वेदं न विजानात्यर्थं । योऽर्थज्ञइत्सकलं भद्रमश्नुते नाकमेति ज्ञान विधूत पाप्मा॥ (यास्क०)

A man who learns वेद but does not know its meaning is simply a Post bearing the load of the Veda. One who knows the meaning or purport of the वेद obtains all the bliss when by his knowledge he is able to remove all impediments to the attainment of the bliss. Thus it is only actions according to the instructions in the मन्त्र that give bliss.

For attaining any thing some Energy has to be spent and this initial Energy is called सावित्री, and the outturn by the expenditure of सावित्री is called सृष्टि and the ratio between the सावित्री and सृष्टि as known by previous experience is called ब्रह्म,

क्रियाशक्तिस्तु सत्त्वानां सावित्री प्रोच्यते बुधैः ।
पुरानुभूतं यत्तज्ज्ञैस्तद्ब्रह्मेतिप्रचक्ष्यते ।
ब्रह्मानुकूला सावित्री सर्वदाकार्यकृत्स्मृता ॥

यंत्रार्णव०

Thus in order to obtain the desired effect one has to apply सावित्री according to the experience of our predecessors in the work.

In order to know the effects of a force सावित्री it is necessary to know the place of its application स्थिति, its direction गति, and its measure मिति, and the time for which it is working युति. We can denote all these things by figures the आकृति, स्थिति, गति by a line, the मिति by the length of the line, and the time by a line at right angles to the first line and thus the calculations of all the work can be done by आकृति बीज (Geometry) or caculations by figures.

The method of treating mechanics in Indian Engineering is different from that of western Engineers and in this essay the Indian method is followed.

TABULAR SYNOPSIS OF INDIAN MECHANICS.

Elements पृथ्वी जल वायु तेज आकाश.

Quality Hardness, Fluidity, Velocity, Heat, Uncontrolability, Inertness, un-

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steadiness, Activity, Straightness, unknowability. Sage—कश्यप, वशिष्ठ, भृगु, अगस्त्य, विश्वामित्र, भरद्वाज, पतंजलि. Deity इन्द्र, वरुण, वायु, सूर्य, मित्र, ब्रह्म. तन्त्र—Beast पशु Fish मत्स्य Bird पक्षी Man मनुष्य Learned ज्ञानी Saint योगी. Sense—Feet, Hands Wings, Eyes, Mind, Self. यन्त्र—Lever दण्ड, Pulley चक्र (Toothed) wheel दन्त Slope सरणि Belt भ्रम. Appliances—Fulcrum आधार, Axle आंख, Teeth दन्त, Angle कोण Thread सूत्र, Surface आधेय, Rope पाश, Chain शृङ्खला, Tube नलिका, Nut अधिष्ठान. Use—Cart रथ, Boat नौका Baloon, विमान Telescope द्रष्टा, Information ज्ञान. यन्त्र—Breaking उच्चाटन, Controlling वशीकरण stopping स्तम्भन, Uniting जोरण, Killing मारण, Work—Blasting, Leading, Stopping, Concentrating, Annihilation of time and space Use,—Tunnels, Quarrying, Canals, Pipes, Sails, Fans Convex-lens, concave lens, Mixture, Solution, Churning, Rolling, Production of fire, Annihilation of Distance and time.

NOTE.—वशिष्ठ treats of hydrodynamics and भृगु of hydrostatics.

The modern machinery has up to now come to the wireless or to inventions for the annihiliation of space; no contrivance for the annihiliation of time is yet found out. When a civilization reaches this point it has reached its climax and begins to go down, degenerate and die.

SECTION 1.

भूयन्त्र OR MECHANICS DEALING WITH SOLIDS.

इंद्रस्तु देवताभूमेः कश्यपस्तद्ऋषिः स्मृतः।
तपः प्रभावात्तस्यैव काश्यपीयं क्षितिर्मता।
प्रभवः सर्ववस्तूनां आधारश्च जगत्स्थितेः।
स्थैर्यकाठिन्ययोगगोभ्यां भूरेवादौ प्रयुज्यते॥
यंत्रार्णव॰

The deity of पृथ्वी is इन्द्र and its sage is कश्यप from the great troubles he took in ascertaining its qualities. The earth is called काश्यपी the element of कश्यप. All things are composed of this element, all things rest on this earth, and owing to its stability and hardness it is the element which human beings employ first पृथ्वी is of two sorts *viz.* movable and immovable. All things such as stones trees, tables, pots etc. are called movable पृथ्वी and many things like fields, mountains &c. are called immovable पृथ्वी. When immovable पृथ्वी is broken to pieces it becomes movable पृथ्वी and when this movable पृथ्वी is put together with a cavity inside, it forms वास्तु or buildings or structures. Structures also are of two sorts *viz.*, immovable and movable. Houses, temples. caves, palaces are immovable structures and carts, boats baloons, pots &c. are movable structures

The element पृथ्वी has to be dealt with in कृषि Agriculture, in खनि Mining, in रथ Roads and in वास्तु building —branches of Engineering.

तन्त्र.

(1) In Agriculture the earth is to be cut and turned over. This is done in nature by the boars with their spikes, by the bulls with their horns and by the elephant with its tusks. Men therefore prepared similar instruments,

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viz. the plough **हल** similar to the spike of the boar, the pickaxe **गोशृङ्ग** like the horns of the bull and the pick **इभदन्त** like the tusk of an elephant. These are the first tools used by man for breaking earth.

(2) In Mining deep hollows have to be cut into the earth. In nature this is done by rats **वज्रबाहु** with their fore and back paws. After this pattern **ऋजु गो हित** bars of iron and phawaras were prepared by men for digging and removing earth.

(3) In Roads things are to be conveyed and this is done by headloads on the heads of men or on the backs of animals. These are called **मैत्रायन** removing by the heads of friends, **आश्वलायन** removing on horse backs and **बौद्धायन** removing on the backs of elephants; when carts come into use a fourth road or way of removing **शाकटायन** by means of carts comes into force.

(4). In Structures one has to prepare shady cavities. This is done in nature by the canopies of trees and men prepare the tents after the model of a tree with a central post like the trunk a canopy like the leaves and ropes like the tendrils of creepers. The trunk is called **आधार** and the canopy is called **आधेय**. The chief quality in a trunk **आधार** is that it should not bend and the chief quality in a canopy **आधेय** is that it should not be torne. When a canopy is very large, it requires subsidiary supports besides the central support and these are called **शाखा** branches after those of the tree and the support with such subsidiary supports is called a **गोपा** or **वलभी** milkman or milkmaid owing to its similarity to a milkman carrying a basket full of milk pots on his head with the support of his hands. Thus the structure of the house is similar to that of a tree the foundations being the roots, posts the trunks, beams the branches, the tiled roof the leafy canopy, and in place of openings in the leaves ventilators, &c. If the subsidiary supports are bent they are called **किन्नर**, and **वानर** monkeys, and these when they meet from opposite sides form an arch. These arches are **वलयाकृति** circular **मालाकृति** elliptical **वृत्तखण्डाकृति** segmental. In the oldest arches the stones of the arches went through in horizontal layers and thus the extrados of the arch was rectangular. The parts of trees are afterwards seen to be joined to each other by a glue-like substance and in houses lime or earth began to be used as mortar between stones after that.

यन्त्र

When the first tools were used with the hands alone, it was found that the reaction of the work was injurious to the hands. In order to avoid or lessen this reaction handles came to be used with the tools such as pickaxes &c. and these handles were called **दण्ड**. It was found that by the use of these handles the effect of the force applied was greater and this **दण्ड**

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is the first mechanical appliance that was used by mankind. These handles were used with axes, hammers, spear-heads, or pickaxes and phawaras. When these handles were used alone they were called यष्टि stick, when these sticks had hard rings at the ends they were called मूसल pestles. When these were made wholly of iron metal they were called ऋजुलोहित or bars वेधिनी.

These sticks or दण्ड are of three sorts *viz.*, ऋजु straight, वक्र bent and भग्न broken or elbow-shaped. Some sticks are used singly and they are called अयुग्म while others are used in pairs and are called युग्म. For using these दंड levers it is necessary to have a support कर or आधार and if the parts of the lever on both sides of the कर be equal it is called a समदण्ड and if the sides are unequal it is called a विषमदण्ड. The balance scale is अयुग्म single and समदण्ड as its two sides are equal. A pair of nut-crackers, scissors or tongs are युग्मदण्ड or pairs and विषम uneven as the distances of सावित्री and सृष्टि from the कर are not equal. Bent and crooked levers are used in many cases on Railway joints and in cabins. The multiplication of the सावित्री and its distance from the fulcrum is always equal to that of the सृष्टि and its disance from the fulcrum.

Consequently if we want to increase or decrease the force, we apply it at the long or the short arm. Thus for crushing a nut we keep the nut closer to the fulcrum and the power away from it or in a tong for removing a thorn we keep the thorn at the longer end and apply our force at the nearer one. Sometimes we apply our power in the best way we can, for example in rowing a boat we attach the boat near the fulcrum and apply our power at the farther end because the boat can not be attached at any other point. In a crane however we want to be able to remove the materials at the longest distance and hence we have to apply our power nearer the fulcrum, though by this application we have to exert a much larger force than is really required. In a pair of scissors when a lighter thing is to be cut it is kept at a longer distance and a thicker thing is kept closer to the fulcrum so that the effect of the force applied for cutting may be more or less as required.

Let us now consider the दण्ड levers used in Indian Engineering.

I अयुग्मदण्ड or single levers.

तुला or Balance--It is a plain straight lever at the two ends of which weights भार are put. The hand which points in the center is called कर and the pivots and its base are called आधार and आधेय.

विषमतुला or uneven balance—is a bar suspended like the ordinary balance but the two arms भुजा are not equal. The weight to be weighed is

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attached at the short end and on the long end the measuring weight is slided.

क्षेपणी the Pole—is a straight bamboo used for pushing the boat off the shore. In this the shore is **आधेय**, the end of the pole touching it is **आधार**, and the hands push and the sliding of the boat is the work done. This is also called **नौका दण्ड**.

अरित्र the oar—is a stick that is rested on water. In this the water surface is **आधेय**, the end of the oar touching it is the **आधार**, the hands push it and the sliding of the boat is the work done. This is called **अरित्र** (**अरेः त्रायते तद्**) saver from the enemy as it saves the boat from the pursuing

पेषणदण्ड the Pounder is a **भग्नदण्ड** swinging at the corner : when one end is moved and that alone, the other strikes against the rice, or wall or door to be pounded In Railway Engineering various forms of these are used in drawing signals or joints.

II **युग्मदण्ड** or Levers used in pairs.

कर्तरी Scissors--These are two levers joined in the center. The hand presses at one end and the cloth is cut at the other. According as more or less force is required the cloth is pushed nearer to, or farther away from, the pivot which is the **आधेय**.

खण्डनी Crackers.—These are two levers joined at one end, the nut to be cracked is put between the two levers near the joined end and the hand presses at the other end.

enemies.

मत्स्यदण्ड the fishing rod—is also a lever. In this the earth is the **आधेय**, the end of the rod resting on the ground is **आधार**, the hand pushes it, and extracting the fish from the water is the work done. The modern crane is a **मत्स्यदण्ड** on a larger scale.

ऋजुरोहित the crowbar is an iron bar for removing stones. In this the earth with a piece of hard stone is the **आधेय**, the part of the bar resting on this stone is the **आधार**, the hand works at the longer end, and removing or uplifting the stone is the work done. These bars are sometimes made bent or **वक्र** for facility of work.

कंकमुख The beak of a Crow or Tongs These are two levers joined at one end and the thing to be extracted is held at the other end and hand presses in the center.

All the above things are made with straight, bent, or broken levers as it suits the purpose or work to be done.

मन्त्र

The various kinds of blasting materials are the **मन्त्र** of **पृथ्वी**. In **कश्यप संहिता** Pottasium chlorate or Nitrate **यवक्षार** and strong Sulphuric Acid **रक्षोघ्न जल** was used for this purpose. Some decoctions of herbs were also used for this purpose. In modern times this science has developed to a great extent and many blasting materials, both solid and liquid, are used for this purpose.

Another मन्त्र with पृथ्वी is इभपाद or Rammer. This is a great and heavy block of wood or metal that falls from a great height and strikes the heads of posts to be driven into the soil. These piles are recommended for foundations of bridges सेतु in marshy soils जांगल भूमि. कर्कट a sort of tongs held in old times the top शिखा of the इभपाद and was dragged by a rope ; at the top the narrowing of the distance pressed the tongs and lets down the weight.

In Modern Engineering steam and electric machines of various description are used for drilling holes, excavating and removing blasted materials. Pile driving machines of various types are also in use.

All the modern machines are only enlargements or extensions of the old ones to suit the modern steam-engine in its various uses.

SECTION II.

जलयंत्र OR MECHANICS OF WATER.

जलस्य वरुणोदेवोभृगुस्तस्य ऋषिः स्मृतः ।
दुष्करेणास्य तपसा वारुणिः सनिमद्यते ॥
यंत्रार्णव०

The deity of जल element is वरुण and in sanskrit literature there are two वारुणि Hydraulic Engineers *viz.* भृगु and वशिष्ठ. Of these भृगु propounded the theory and rules of Stagnant (Statics) water and वशिष्ठ those of flowing water. Water is in two states *viz.* stagnant or steady and flowing. The water in the ocean, tanks or pots is stagnant and the water in springs, pipes and rivers is flowing The particles of earth are firmly attached to each other but the attachment of the particles of water is much less. If anything is dropped in water जल it is supported by it and the utmost strength the water can exert in this way is the weight of the same mass of water. If a thing is put in पृथ्वी it also supports it but it can not exert any strength until it is crushed ; that is the utmost strength that पृथ्वी can exert. But water is more discreet and when the weight of the thing put in it exceeds its own weight it allows it to pass through and if it be less it lifts the thing till the weight of water displaced is equal to the weight of the thing. As we go deep into water we find that the weight of water is greater as we go deeper and deeper. In the same way lower water has a more steady temperature throughout the year.

तन्त्र

In dealing with पृथ्वी our object was उच्चाटन to break and overturn it but in dealing with जल our object is वशीकरण to keep it under our control. The nature of the work and the appliances is therefore quite different in the two cases. In nature we find fish and tortoises working with water and the implements used with water are fashioned after these. We deal with

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water under two heads *viz.*, **जल शास्त्र** Hydraulics and **नौका शास्त्र** Navigation. In Hydraulics we allow the water to work on us and in Navigation we try to work on water. We sometimes deal with standing water and at other times we deal with flowing water. If we compare our dealings with **पृथ्वी** with those with water we find that **जल शास्त्र** is similar to **कृषिशास्त्र, कूपशास्त्र** is similar to **खनिशास्त्र** and **नौका शास्त्र** is similar to **रथ शास्त्र** and **तडागशास्त्र** similar to **वास्तुशास्त्र.**

(1) Sage **वशिष्ठ** gives the following roperties of flowing water in his **जल शास्त्र.**

(*a*) When water begins to flow the velocity of water flowing along the earth is less than that of water flowing on water. Water flowing at a higher level thus goes faster and therefore the end of flowing water is convex like the head of a fish.

(*b*) The top surface of flowing water is never level and straight. It is always convex like the back of a tortoise. One part is higher and the surface falls from this point to both the banks.

(*c*) The side on which a river is depositing silt is farther away from the highest point in the river surface and the surface of water there is the lowest in the whole section.

(*d*) The side on which the river is eroding is nearer the highest point and the surface of water at this bank is highest than at the other.

(*e*) When flowing water is stopped, the stoppage of the velocity exerts an additional pressure on the obstruction. This velocity is converted into the height of water and thus the water overtops the obstruction and overflows it with the balance velocity if there be any, while if there be no balance velocity it does not overflow.

(*f*) If the flow of water is completely obstructed by a very high obstruction, the springs from which the water was flowing get choked and diverted while new springs start from the earth now submerged, thus the tank thus formed gets ultimately dead and useless.

(*g*) The flow of any water should never be completely stopped ; water should always be kept flowing, as frequently as possible.

(*h*) When water is stopped any silt flowing in it is stopped and deposited. Some measure must therefore be taken to get this silt washed away. For this purpose revolving gates **अरर** that revolve on a horizontal axis should be used.

(*i*) The shape of the dam should be like the mouth of a fish and its top should be like the back of a tortoise and the canals taking off from the tank should be like the legs of a tortoise while its head and neck should represent the overflowing water.

(2). For the **कूप शास्त्र** the following nformation is to be collected for each locality.

(1). The rainfall at various places should be measured as regards its season, direction of fall, intensity, and

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duration. At present rainfalls are measured but its intensity and duration is not measured and hence calculations based on these measurements fail.

(2). The flow of water underground and the effect of rain fall on it should be marked.

(3). The changes in the flow of water underground with the causes of fluctuations if any should be ascertained.

(4). The causes which lead to the changes in season, intensity and duration of rainfall ought to be investigated with a view to be able to control them.

(5). The quantity of water absorbed in each kind of earth, the period for which it remains absorbed, the loss of this water with its causes and the effects of the soil on water and of water on the soil ought to be found out.

(6). The effect of the changes of wind on water flow and of water flow on wind should be ascertained.

(7) What relation the growth of jungle and its destruction has on water, wind and rainfall. The removal of trees from the tops of hills and the planting of trees along the roads in the plains has changed currents of underground water : is this corroborated by experience ?

(8) Maps showing the currents of underground water composed from the wells and their springs in the locality should be prepared.

Just as we prepare the geological maps showing the layers of minerals and rocks and from these prepare the schemes of mining operations, in the same way maps showing the level of water and its underground currents and the water-bearing strata should be prepared for use with **कूप शास्त्र** for enabling men to have their wells and irrigation operations systematised. Particularly it should be seen that the effects of our improvements on the surface-flows should not be disastrous on underground water currents but they should if possible encourage underground water current for well-supplies.

(3) For **नौका शास्त्र** we have got marine plans showing depths of water, dangerous rocks, light-houses and shoals so as to guide mariners in their travels. Similar maps ought to be prepared of all tidal creeks and navigable rivers.

(4) The sage **भृगु** has noted the following results of his observations for guidance in **तडाग शास्त्र** or construction of tanks.

(1) The surface of stagnant water is always in one plane equidistant from the earth's center whatever be its shape or size.

(2) The pressure of water increases as we go below its surface and this can be represented by a triangle and calculated also accordingly.

(3) The temperature of deeper water is more constant than near the surface.

(4) When water falls over an obstruction the shape of the falling water is a parabola **अक्षास्त.**

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(5) As water drops down from a wall with a sudden velocity, this velocity is produced by a proportional fall of the surface from the steady water. The water is drawn to the fall in the shape of an inclined plane and rushes off the end.

(6) When water rotates like a whirl, its surface is like an inverted parabola.

(7) The whirl of water has a centrifugal force and velocity and this velocity is due to the fall of the point below the steady surface.

The velocity or fall can each be calculated if the other is known.

तन्त्र.

The velocity of flowing water itself is its **तन्त्र** and this can be used for floating down things. Timber &c., is thus floated down rivers to its destination Fish that float in water are hardly ever used like beasts but the shapes of boats are constructed after the pattern of the body of a fish. In Indian mythology there is the legend of a king having his boat drawn by a fish but nobody has again done so though there are instances of rings having been put in the noses of fishes. Many Indian holy places have such fish with the Nose-ring in their noses seen today.

यन्त्र.

The principal mechanical appliance of **पृथ्वी** is lever **दण्ड** and so the principal mechanical appliance of **जल** is **चक्र**. The idea of a **चक्र** has its beginning from a bent lever **भग्नदण्ड** moving round its pivot or **आधार**. We see this in the turnstyle or capstain bar. This contrivance is to be seen on all Indian wells either for drawing water by hand or as in the Persian wheel by feet.

The lever is also used for lifting water and is called **तुलायंत्र**. In this a vertical post has a horizontal beam pivoted on its top. At one end of the beam is a stone tied on it firmly and at the other a bamboo is fixed vertically. At the end of this bamboo is a basket which brings up the water. The bamboo is pressed down into the water and the weight of the stone lifts up the water. It is evident that the stone is fixed on the shorter arm and the bamboo on the longer one so as to afford advantage in the power used by the hand.

In the **जलयंत्र** or Persian wheel the pots lifting the water are tied to two ropes in the shape of a garland and the friction of the wheel with the rope turns the garland and brings up the pots full of water. In this the wheel is turned by a man with his feet as well as hands. In the ordinary water wheel which is like a capstain the pot bringing the water is tied to a rope which is wound round the wheel. The spokes are turned by the hand and the winding up of the rope brings up the pot full of water. In these wheels the **सावित्री** power and **सृष्टि** work are continuously working at an angle with each other which is the angle of the bent lever of which the wheel is formed.

In the ordinary wheel the power **सावित्री** and work **सृष्टि** are continuously

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changing their points of application or attachment to the wheel but there is a sort of wheel called eccentric **विषमचक्र** in which one of these is fixed to a point in the wheel. This is well seen in the **पेषणीयंत्र** the Grinding wheel. By this means the circular motion of the wheel is changed into a to and fro motion and vice versa. This wheel can be used in **क्रकचयंत्र** Sawing wheel for sawing logs of wood; the circular motion of the wheel drawing the saw to and fro. In modern Steam and .Motor engines these eccentrics are very widely used for changing this to and fro motion of the piston the rod into the circular motion of the fly wheel.

Up to now we have considered single wheels but two or more wheels can be fixed on one axle and thus produce different velocities and forces by the application of a common force. Similarly two or more wheels of different diameters may be joined by straps, belts, or strings. A collection of such wheels is called **चक्रसंघात**. In a **चक्रसंघात** some wheels may be fixed **अचल** and some may be movable **चल**. Such **चक्रसंघात** are called **कपिन्** from which the vernacular name **कप्पी** is derived as also **कपीतन** a Bunyan tree having ropes hung from the top as if from a block of pulleys *viz.* the adventitious ropes. These are very widely used in modern mills for transmitting velocity to different parts of the work.

The power that can be obtained from water is from two sources *viz.*, (1) its weight and (2) the force of its velocity. The weight of water is used in two ways *viz.*, by putting a thing in water and by throwing water on a thing.

(a) We have already seen that if we put a thing in water, the latter uplifts it. This power is used in floating things such as boats and in finding out adulterations in metals, woods &c. We also use this power in removing chaff from corn, mud from metals, and in differentiating grains of different size and weight from one an other.

(b) We have seen that by means of the Persian wheel we can lift up water. If however we fix the pots to the wheel and throw water into them it will make the pots heavy and thus turn the wheel round and round. Water flowing along wheels is thus used for grinding corn. This also is **जल यन्त्र**.

The velocity of water is also used in two ways *viz.*, by going with it and by borrowing velocity from it.

(a) We have seen that by floating things along flowing water we can carry them with ease.

(b) If we make water push the planks or blades on a wheel as it passes on, the wheel can go round and round as the water passes. This is called **जलचक्र**. The converse of this is also true; that is if we fix the oars of a boat on a wheel and turn it, the wheel would push the water and the boat would move. This boat is called **चक्र नौका** and was frequently used on the Ganges. Even today the Maharaja of Benares has such boats on the Ganges at Benares. On a boat four

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such wheels were generally used in old days.

धारायन्त्र is the ordinary syringe. This was another machine used with water. In this the pressure on water was removed in one place and the drawn up water was thrown out. The construction of this was suggested by the trunk शुंडा of an elephant and hence it is called शुंडायन्त्र also. The word धारायन्त्र is sometimes used for a syphon which is worked on the same principle and was used in draining off pools of water into lower valleys.

The modern hydraulic presses are only converse of this as instead of removing the pressure on a portion of water surface they add it on one portion. This was not known in ancient India.

The reaction of water on revolving things was used in मन्थनयन्त्र or भ्रम यन्त्र. This was a fountain with a revolving head, and as the water escaped from this head, it turned round and round and cooled the air. The modern turbine producing electrical current is a मन्थनयन्त्र on a large scale,

In नौकाशास्त्र we read of भ्रम नौका and I suspect the भ्रम used is a turbine and the reaction of the भ्रम यन्त्र on water moves the boat. Details of the construction of these are not available beyond only a mention that on a boat four such भ्रमयन्त्र were used. I think भ्रमयन्त्र does not mean screw-propeller but only turbines like the churn used for churning curds, &c.

Water can be lifted up by means of the screw invented by Archimedes. In the inside of a cask planks are fixed like the thread of a screw and the cask is fixed on a slanting axle. When this axle is turned the water rises up and flows out at the other end of the cask so long as one end is immersed in water.

मन्त्र

The modern Pumps, Hydraulic presses, Hydraulic rams are all instances of मन्त्र power of water.

In ancient Indian Engineering when water was dammed and conveyed in open channels or closed conduites, it was considered the वशीकरण मन्त्र controlling of water. This controlled water was used for Irrigation, Water Supply or Power purposes as noted above,

Another use of water मन्त्र was in extracting salts by means of solutions. Various kinds of salts were extracted from the earth or ashes of plants in this way.

Crystalization of sugar etc. was another मन्त्र. The shapes of the crystals denoted the quality of the material. Thus flaked sugar candy was preferred to block crystals, and the tissue-shaped or thread-like तंतुमय नवसागर Ammonium nitrate to the crystaline variety and so on. When dealing with salts the shape of the crystal is particularly specified by Indian Engineers.

मन्त्रित जल or Acids of various sorts were also used in destroying and burning enemies or demons. It is already noted that Sulphuric Acid was used with Potasium Cholate or nitrate as a blasting agent.

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A PROPHET OF THE DAWN.

By T. L. Vasvani.

I am not an Arya Samajist but I am a *bhakta* of Rishi Dayananda. He is not the monopoly of a samaj or society. He belongs to an International Samaj of the Spirit. Today you meet under the flag his hands held high—the flag of Om. The Day is coming when the West will pay homage to the flag.

In his hands a heavy club, in his heart a vision of the flame.—Dayananda went from place to place to proclaim to his people:—Arise; Awake; The Dawn is coming; Dayanand was a prophet of the Dawn.

He created a new pride in India. When he went upon his mission, the people were immersed in *tamas*—in inertia, in mental and spiritual darkness. The masses were engulfed in superstition. The "educated" turned westward for light and strength. Dayanand raised the cry:—*Back to yourselves*! With the vision of a *Rishi*, he saw the greatness of Aryan civilization and culture. His was a voice almost in wilderness. We know now that he spoke wisely, for he saw truly. As the years have passed, we have learnt to see more and more of the shut-in splendours of Aryan ideals and Aryan achievements. Not without reason did pilgrims come from foreign lands to India in search of her Scriptures and Sadhus. Not without reason did Aristotle say to Alexander that the gift he wanted from India was the gift of a Yogi. Not without reason did Timocles say he had visited Italy, France and Africa but met not one man who was either wise or happy but that when he came to India he met on the banks of the Ganges a silent man who was wise and happy and who expressed the highest philosophy of life in a few beautiful words:—*God alone is steadfast.* We know now that ancient Aryans were great not alone on the plane of thought and religion and art but also in the realm of action. And materials exist for volumes on Aryan influence on Egypt, Greece, Babylonia, Java. It was a refined civilization the Aryans had evolved. Modern age is civilized—over-civilised, but—as Kant saw over a century ago-is not moralised enough. Modern civilization is like the structure of Ibsen's *Master Builder* who built towers rising higher and higher but in the end making the architect himself dizzy and so carrying him high only to perish just when he thought he stood on a pinacle of fame. Modern civilization is perishing of its pride (*ahankar*) and *bhoga*. In Wisdom is the cure of the world's malady.

And repositories of wisdom are the Vedas. To them did Dayanand turn for light to take the world out of the deepening darkness. The Vedas—not a "babb-

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Brief notes of address at the Arya Samaj Anniversary, Karachi.

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ling of an infant people," as Max Muller called them once. But a Revelation to the Race; Guard them, said Dayanand. And rightly. Science is built on laws of nature. Psychology is built on laws of mind. Dharma or religion must, also, be built on *laws*. And the singers of the Vedas have been named *Rishis* i. e. seers because they saw into some of the mute laws of the Spirit and of Civilization. These laws are hinted at in the Vedas. Let me, in passing, refer to a few of them.

(*a*) *Law of Brahmacharya or Simplicity*:—The Vedas repeatedly urge that in simple life is our salvation. Does not history show that racial decay is due to luxury? Prof. Herman Lunbong, head of the Race Biological Institute at Upsala, Sweden has recently pointed out that neither wealth nor luxury is good for civilization. Modern civilization is smitten with passion for *bhoga*. Hence its decadence. Back to the simple life,—is the Vedas' call to the Nations.

(*b*) *Law of Surya Shakti*. This, too, is hinted at in several places in the Vedas. There is a connection of Vedic rituals with the daily ritual of the sun. We are fortunate in this country to have the bright sun upon us. In London the climate changed so much, I was tempted ask to them here;— "Have you a climate at all?" For days and days together I did not see the sun. Clouds, Rain. But I panted for a sight of the sun. At Marseilles! I saw the sunrise. What a glorious sight! And I came back to India with a deeper love for the sun. Our skin is sun-tanned. Thank God for it! The sun's rays have a healing quality. The sun is a medical agent. It destroys bacilli. Education authorities in Europe have recently drawn attention to the value of sunlight baths. Not without reason did the aryans have open air education in ancient India. Breathing exercises in the fresh air do good to the body and the mind. Vedic Aryans did not stuff themselves with clothes like the moderns; but more light clothes and exposed their bodies to the health-giving violet and ultra-violet rays of the sun. By taking in the Surya Shakti and being in tune with nature, the Aryans built up refined bodies and spiritual minds.

(*c*) *Law of Prayer*:—The Vedas have been called a collection of Prayers These prayers may, I think be classified. There are in the Vedas:—

(1) *Cosmic Prayers*—Prayers for rain, prayers for proper regulation of nature's elements and operations. Then there are (2) *Racial Prayers*—specific prayers for the health, happiness and progress of the Aryan race. How many of us who ask for *Swaaraj* Pray to God to bless India in the Struggle? Then there are (3) *Atmic Prayers*—prayers for the soul's intimate communion with the Divine Spirit. I believe in Prayer. I believe that true prayer is a creative force. And true prayer is like the ancient Aryan's prayer, full of child-like faith. If we moderns could but be as *children* and pray in faith to the All-father!

(*d*) *Law of Yajna or Sacrifice*. The Vedas are full of beautiful Mantras bearing upon Yajna or sacrifice. What could not Indians achieve if they paid homage to this great Law of

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Sacrifice. *Sacrifice of Caste*;—therefore no untouchability The only low birth is ignorance; the only *Sudras* are the illiterate. *Sacrifice of narrow nation-cult*;—therefore no hate or strife in the sacred name of Freedom. *Sacrifice of communalism*, therefore no Hindu-Muslim conflict. The Hindu and the Muslim both belong to the one Mother, India. For India must be free not that she may dominate others but that she may serve Humanity. *Bharat Hamara.* "India is ours". I have heard this sung with great fervour and patroitic faith. But there is yet a higher strain—*Barat Tera*—India is Thine, O Lord!" Sing that in your heart. Make a sacrifice even of India at the feet of the Lord. Pour yourselves into the great *yajna* of the Spirit, as did Rishi Dayananda. And out of the ashes of Sacrifice will rise a New India, a New Civilization, a New Humanity.

FROM BERGEN TO CHRISTIANIA.

(Mr. Manmohan Rai H. Desai.)

At 8-15 A. M. we started and Bergen and its environs began to recede out of our ken. The Bergen-Christiania Railway managed by the State is said to be one of the best scenic railways of the world. It is also said to be a marvel of engineering skill. Upto Christiania it commands, in its own way, typically glorious scenery, certainly among the best, in Europe. The Railway must have cost a fabulous sum to construct. It took fourteen years to complete, being 370 miles in length with 184 tunnels and 55 stations. It was a warm and sparkling day. The train was crowded and I was pervaded with an unpleasant feeling—why I can't say. As Bergen receded from us, both to our right and to our left began a series of splendid pictures of gleaming fjords and austere tho' significant fields, magnificent mountain ranges, beautiful valleys, glistening water-falls often relieved by picturesque little hamlets, children-like basking under the sun-rays in the laps and at the feet of mountains or on the banks of the fjords or nestling themselves in the bosom of the valleys, with wooden houses noticeable alike for their modesty and their simplicity of design Here and there, the sturdy mountaineer could be seen gliding on the glossy waters of delightful fjords in a small canoe or regaling himself in search of the salmon either for recreation, sport or food. Vaksdale was the first station, we halted at, and approached Dale thro' cleaved mountains and beautiful streamlets which were a delight to the eyes and poetry to the soul. We approached the modest yet graceful Dale for a short halt to soon behold a fine picturesque effect of the loop round the river lying at Evanger, round whose

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banks in a semi-curve our train glided vouchsafing us a glorious view of the river, enclosed in the bosom of majestic and wooded mountains with the unpretentious quiet and secluded village of Evanger stretching in wooden houses at its feet. At almost every bend of the line, the scene changed. Bold head lands ran out in the calm waters of the fjords, often dotted with rocky islets into which sometimes silvery cascades descended, sometimes glinting roaring rivers dashed. Occasionally a few patches of arable land were seen. From Evanger could be obtained a beautiful view of the mountain (Myklethveit-vete) 3470 feet high.

We now arrive at Voss where the panting train rests for a while from its labour of a journey thro' fjords and fields, chasms and ravines, beautiful and grand for us to see, irksome for it to ascend and traverse. From Bulken on to Voss, we noticed patches of snow scattered about on the tops and sides of hills, but from Voss, the landscape changed to one of more dour and grave aspect than the one we had emerged from. We had two huge engines to draw our train and with a speed that was slow and dull, they laboured up the ascent of some hill, and we soon arrived at Ygre, through a landscape conspicuous for deep ravines, low valleys, yawning chasms, sturdy rocks clothed with vegetation and passed the stations of Grove, Reime, Opsel and Myrdal. Now began our journey over the Hardanger Range to Pinse (4000 ft), considered to be the finest ski-ing resort in the world. Here and there we saw low abysses illumined with glistening water-falls. "The view from the train as it emerges from the innumerable snow-sheds constructed for the protection of the track in winter is of the wildest and the most rugged character and as Pinse is approached, there is a fine view of the Hardanger Glacier obtained.' And a splendid vision of the Glacier with its eternal snows were obtained. It was a bright mid-noon sun that was now sporting with the snow. Immaculate white of the glacial ranges was now beautifully set off by the sky with its blue shadows of colour reflection on account of the sun-rays. Like a lovely chrystal sparkled the glacier. A profound silence or repose as of death pervaded its regions. Nature seemed wrapped in mysterious or rather mystic symbols significant of the purpose of creation. I felt that there was a deeper significance in life than one of mere existence. Evidently the glacier seemed shining to admonish me, of what I could not catch however much I tried.

The railway here between Myrdal, Pinse and Hangastol lies on the great mountain waste at an elevation of from 2800 to 4000 ft. "All around there lies the land of glaciers covered with snow, broken often by black crags and huge boulders, covered at low-lying regions with pools and lakes of water. From Pinse the railway descends to Hangastol and passing Ustacoet, we came to Gjeils— a beautifully wooded resort on the lower slopes of the mountains. Now began the more soft and relaxed landscape, very pleasant after the stern and awe-inspiring solitude of the glaciers. Now we passed thro' the mellifluous Eastern coast scenery with chains of hills grown with luxuriant vegetation, nice villages having quite

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an affable look, beautiful green lawns, and splendid firs, oaks and pine forests. Porpse, Nosbyen, Gulwick we passed. Nice rivers dashed along guin crags or broke thro' huge stones raging against them with thunder and storm. Pine forests were plenty and from the dining car we saw a beautiful lake of placid waters at the feet of a stern rock on whose breast human beings enjoyed rowing, angling etc., according to their taste. But now with the shadows of twilight as the night began to darken, the lines became invisible and blurred and I too napped. A lovely moon hung in the firmament with infinite sadness. It was indeed a lovely and enchanting scenery in this land of the Midnight Sun, the land of the Sagas, the land of loveliness.

THE VEDIC IDEA OF THE GOAL OF LIFE.

(By Pt. Dharma Deva Siddhantalankar.)

'What is the summum bonum of life?' is the question with which the science of Ethics is mainly concerned. No religious scripture has left the question entirely untouched. According to the atheists like Charvak and Brihaspati sensual enjoyment is the only goal of life. "Eat, drink and be merry" is their motto According to the Buddhists, Nirvana or the annihilation of self is the end of life. The Advaitees or the pantheists hold that to be united with or to merge in Brahman is the ultimate end of human life. Here I do not propose to discuss the matter at length. I only propose to give to the readers a clear idea of the goal of life according to the Vedas. I hope that my readers will try to grasp the Vedic ideas thoroughly and then on a comparative study will realise the sublimity of the Vedic teachings.

There can be no gainsaying the fact that the attainment of emancipation or Moksha is the final end of every human soul. The whole Vedic literature is full of sincere prayers for the attainment of deliverance from pain and bondage. But what is the nature of that deliverance which is so often sought after by all the seers, sages, and saints? Is to be literally one with Brahman or to merge one's self in the Universal Self the meaning of Moksha? In other words, to extinguish the separate entity of the human soul--is this the meaning of Mukti? I think the answer to such questions can not be given in the positive. I can say it positively that the Vedas do not give tone to the neo-Vedantic idea of being literally one with God in emancipation. The Vedic conception of Mukti is that state of perpetual happiness in which a pure spirit enjoys the bliss of Brahman and is free from the bonds or slavery of matter. Let us take into consideration the following few Mantras from the Rig Veda.

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यत्र ज्योतिरजस्रं यस्मिंल्लोके स्वर्हितम्।
तस्मिन् मां धेहि पवमानामृते लोके अक्षित
इन्द्रायेन्दो परिस्रव ॥

The sum and substance of this Mantra is--O God. the purifier of our spirits, lead us to that perpetual immortal world or state where there is always divine light and where happiness reigns day and night. Shower on our heads the eternal bliss. It is in sincere prayers like this, that we can find the idea of the goal of life according to the Vedas. The attainment of divine bliss and divine vision have been chiefly mentioned in the above quoted verse. The seers never run after the transitory objects of the world. They do not condemn riches but their aim in life is never to amass wealth. They take greater care of the spiritual wealth which consists in getting true abiding happiness and peace. To attain immortality is in their eyes the greatest achievement. Without the grace of the Almighty the attainment of true and abiding happiness is impossible, therefore regarding God as their Father, Mother and Friend they pray to Him for fulfilling their heartfelt desire. In the same Sukta we find another verse which is equally remarkable. It runs as follows :--

यत्रानन्दाश्च मोदाश्च मुदः प्रमुद आसते।
कामस्य यत्रासाः कामास्तत्र माममृतं कृधीन्द्रा-
येन्दो परिस्रव ॥

It means--O my Lord, the giver of all the true delight! Lead me to that state of immortality where there is happiness and perpetual happiness. Where there is not the least contact of misery. Where all the desires of a soul are fulfilled. Shower on me eternal bliss. What a noble prayer is this! The attainment of happiness is the end of life no doubt, but not the fleeting happiness that is got by riches or honour. Riches and honour are not looked down upon by the Vedas but they alone can never give us true happiness. The true and abidi g happiness comes always from within, never from without. The abiding peace is the outcome of the realisation of Brahman within the soul. It is this divine peace that we should all aim at. It is this divine eternal happiness that should be sought after by all of us. This then is the goal of life, *viz* the attainment of divine power, divine peace and the divine happiness. What have we to do for the attainment of all this?

We have to devote ourselves heart and soul to the contemplation of that All-powerful God who alone is the giver of all true happiness. We all are His children and if we sincerely pray to him for the attainment of His divine vision, He will certainly grant it. Let us then pray to our Father in the following manner :-

इन्द्र क्रतुं न आभर पिता पुत्रेभ्यो यथा।
शिक्षाणो अस्मिन् पुरुहूत यामनि जीवा ज्योति
रशीमहि ॥

Atharwa 20-79-1.

O God Almighty! Fulfil all our desires as a father fulfils the desires of his children. Give us true knowledge so that we may enjoy divine light. The Divine vision or light prayed for in verses like this stands for the spiritual vision which enables us to see the hand of God everywhere or to realise the presence of God in all the things

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and beings of the world. It is only after getting this realisation that we may attain abiding peace and happiness and never before that. The Holy Communion with God lifts up the veil of illusion from our eyes and then only we are in a position to feel His Omnipresence. But have we to renounce all our worldly duties in order to reach that summum bonum of life? No, it is not only for the Sanyasis to realise Brahman, though undoubtedly they are in the best position to do so. The realisation of Brahman is open to all—to Brahmacharis, house-holders, forest-dwelleres as well as Sanyasis. Here is a verse from the Rigveda which clearly says that the house-holders also can certainly receive the divine vision if only they get rid of all sins and try to develop their powers harmoniously.

विश्वाहा त्वा सुमनसः सुवक्षसः प्रजावन्तो अनमीवा अनागसः। उद्यन्तं त्वा मित्रमहो दिवे दिवे ज्योग जीवाः प्रतिपश्येम सूर्यम्॥

Rig. 10-37-7.

It means, Oh Divine Sun-God the dispeller of all spiritual darkness! Let us always receive Light, being possessed of noble minds, perfect sight, endowed with noble offsprings perfectly free from diseases and sins. Truly God is the dispeller of all darkness that prevents us from seeing His hand everywhere. Truly it is mainly by the grace of God that a devotee gets the divine vision and then becomes free from the bondage of material things. He is no longer under the thumb of matter, but feels his distinct spiritual existence. But even that realisation of the highest order won't do. According to the Vedic idea mere knowledge or mere devotion can never lead us to our destination. Knowledge and actions must go together. Therefore the Yajnas have been regarded as an indispensable factor in the attainment of Mukti. The true worship of God Himself demands that disinterested actions must be performed by every one who desires to enjoy the bliss of Brahman. To do good to God's children is certainly the best way of pleasing God. It is for that reason that it has been said in all the Four Vedes.

यज्ञेन यज्ञमयजन्त देवास्तानिधर्माणि प्रथमान्यासन्॥

Rig. 10, 90, 16 Yaj. 31, 16.

i. e., wise men worshipped God through Yajna, that is——Honour to superiors, association with equals and charity to the deserving. This threefold duty constitutes Yajna which is one of the primary Dharmas of all men. Whatever is done with a disinterested heart only keeping the good of the society at large in view may be called a Yajna according to the Vedic idea. The Upanishads which propound many of the Vedic ideas tell us plainly that the whole life of a man should be regarded as a sacrifice. "पुरुषो वाव यज्ञः" that is what we read in the Chhandogya Upanishad. Unless the whole life of a man becomes as a sort of sacrifice for the welfare of others, one can in no way fulfil the goal of human life. Let us then make up our minds to acquire divine power, divine peace and divine bliss through meditation and disinterested acts of service. Let us be in right earnest to realise the eter-

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nal truth mentioned in the Vedas regarding the goal of life and then leave no stone unturned to propagate the sublimest Vedic ideas. May God give us power to realise these things for ourselves, so that being endowed with the divine spiritual vision, we may be in a better position to propagate the eternal trurths taught by Him through the Vedas.

Intellectual Freedom and the Arya Samaj.

(By Pt. Rala Ram M. A.,)

Thought is more powerful than dynamite; it is stronger than steam. It is more terrible than an earthquake. Thought is the biggest and mightiest revolutionary; the worst destroyer and the best builder. Autocratic governments are not afraid of individuals but of thought that runs counter to them. A man is small or great, base or holy, good or bad according to his thoughts. A man is a bundle of thoughts. In society he is valued according to the worth of his thought. Thought is the mother of action. From it germinate all the institutions and all the movements. The Protestant Reformation was at first a mere subtle invisible Thought pregnant with potentialities mightier than those of an earthquake. The French Revolution was a thought at first. Rousseau and Voltaire did not bring about the revolution; they were too feeble for it; it were their mighty thoughts—of which they were the humble instruments of propagation—that upset thrones, shook kingdoms to their very foundations and sent kings abegging. The love and the feeling of brotherhood born of community of thought is stronger than any that comes of blood-relationship. Difference of thought sets son against father, brother against brother. So thought is a mighty factor to be reckoned with in our dealings with humanity, it is the first and the foremost item to be considered in our estimate of individuals, movements and institutions.

Freedom or slavery is also a matter of thought. A man free in his thoughts is free, whatever the form of government may be. Mahatma Gandhi was right when he said that Swarajya or no Swarajya, he was already a free man, because his thoughts were free. A slave is a slave only so long as he *thinks* he is a slave, so long as he has got a slavish mentality. A free mentality and he is free. When a man has achieved freedom in the domain of thought, he is free for ever. Put him in chains but he is free. The free soul discards these irons. For him then "stone walls do not a prison make, nor iron bars a cage." But a man who has got a slavish mentality, who must think according as somebody else thinks, who feels bound to believe what this or that man said, who thinks it his duty to suppress or start a malignant compaign against certain thoughts that disturb *his* irrespective of their intrinsic merit, who will not hear of comparing the two opposed sets of thoughts, is the true slave, although the system of government under which he lives may be the most democratic possible. Freedom like virtue is first and last a thing of the mind; so is slavery.

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As with individuals, so with nations. A nation is an aggregate of individuals. If a large majority of its members possess intellectual freedom, the nation can not be kept under subjection by any power ; nay all the states of the world together can not reduce it to the status of a subject nation. When a nation or the major portion of it have a slavish mentality, sooner or later it is sure to fall a prey to foreign rule. The history of India from 500 A. D. to 1850 A. D. affords a wonderful proof of the veracity of the above statement.

The degradation of the Hindu Society is said to date from Mahabharat. But the decline in every sphere of human activity becomes very rapid and quite manifest about the beginning of the sixth century A. D. Only here and there we see glimpses, transitory and fast-fading, of the pristine glory of the Aryas. These glimpses are very few and very far between. They are the flicker of the dying flame, the last gasps of expiring greatness. India or say the Hindu Society is fast preparing to assume the role of a subject nation, it seems rushing fast to put on the shackles of slavery. Its downfall is complete about the time of Mahmud's invasion of India. The reason of this downhill descent is not far to seek. If we examine the trend of thought in the Hindu Society and Hindu literature, we at once come to kdow the real cause of it.

Duriug these ceuturies Hindu mind and consequently Hindu literature—for literature is only a reflexion of life—had been loosing freedom of thought. The Hindu brain was becoming slavish. Literature, the re ervoir of thought, was becoming putrid. To a Hindu, religion is an all-embracing force. There is no department of his life but religion controls it. There is no action but religion guides and determines it. There is no detail of life but religion must regulate it. Religion is to a Hindu as the breath of his nostrils. Consequently Sanskrit literature is first and last religious literature. Other elements of literature are present in it but religion (Dharma) dominates all others. So when religion, deviating from the original pure channels, began to foster a slavish mentality, there could be no hope for the Hindu. The Hindu came to loose the faculty of thinking for himself; the critical faculty altogether disappeared. A typical Hindu believes implicitly in destiny ; he believes that he has no hand in the making of himself, that he is a toy in the hands of fortune ; circumstances mould him, while he has no power to fashion his own circumstances. He firmly believes that he can in no way change the existing state of affairs ; if he is suffering at the hands of others, it is ordained that he should suffer.

He is innocent and peace-loving and rascals trouble and torment him ; well (he will tell you) in Kaliyuga it is bound to be so. He can not conceive of anyhow remedying the defects in the existing state of affairs, of bettering his position in the world. Almost every Hindu believed and argued thus in the past. His (so called) religion taught it. Thus the Hindu became a slave to circumstances and environments. He came to have a mentality exactly calculated to produce slaves. Without such a mentality, how could he design and scheme, how could he adjust himself to changed circumstances and how be up and doing at the time of a national calamity ? He lost all originality of thought (so characteristic of his ancesstors of remote antiquity). In History he has since the beginning of the 11th century again and again shown his incapacity for combination and co-operation. Men with such a slavish mentality are truly incapable of it. This incapacity is the necessary consequence of such a slavish theory of life. Such a theory of life could not but be productive of superstition. In the Hindu mind the boundary between the imaginary and the real became blurred and was at last quite obliterated. He became incapable of practical action. Therefore the foreign invaders soon re-

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duced the Hindus to subjection, because their brains had already been enthralled, their minds were already in a prison. Intellect enslaved, there was nothing else worth conquering. They were already slaves, only a master was wanting.

This state of affairs continued right up to the middle of the 19th century. Whoever invaded India remained the master of the field. Then came a mighty Rishi with the torch of Light and Reason in his hand. He applied the axe of rational criticism to the roots of the Upas tree of pessimism, superstition, fatalism and ignorance. In teaching with all his might that man is the architect of his fate and the creator of his environments and that he can control and shape to his end all his circumstances he rendered the greatest service to the Hindu Society. He taught that Activity (पुरुषार्थ) and not Fate is the dominant factor in life. He showed the Hindu his better self and thus induced him to bestir himself. He introduced Reason in religion and thus dealt a fatal blow to superstition. Like the true slave the Hindu had no confidence in his own intellect. He thought it his duty to follow whatever custom happened to be in vogue at the time and to accept as gospel truth whatever was written in Sanskrit in any book. Dayanand taught him that he must accept only what his own reason told him to be true, that he had the power, the right, the capacity to modify or give up what was against nature, whatever did not suit his conditions, whatever violated the eternal moral laws. He could not have rendered a higher service to the Hindu society than infusing a spirit of self-confidence in it. He liberated the Hindu intellect from the thraldom of scholastic absurdities.

The Arya Samaj has been persistently teaching all these healthy doctrines. It has by its teachings, to a large extent, shattered to pieces the original slavish mentality of the Hindu; the necessary consequence of which has been the rise of a spirit of freedom. Intellectual freedom always makes for progress in all directions and in fighting for freedom of thought it has done a very splendid service to humanity and the cause of progress.

No amount of education on western lines could have accomplished this object. It could not have dispelled the clouds of superstition; because almost every Hind distrusted, (rightly no doubt), in the past and now distrusts this education and the culture on which it is based. This education couldnot have remedied the defects except by dehinduising the Hindus, to say nothing of the other defects that, being inherent in it, the Hindus would have imbibed. The culture on which the western system of education is based is quite different from and in many ways diametrically opposed to ours. It looks down upon our culture even as seen in its purity in our Shastras. The system of education as started by our foreign rulers was instinct with this feeling of its (the western culture's absolute superiority to our culture and therefore it proposed to mend matters by ending our culture and building upon its ruins a Christian or semi-Christian civilisation. To have accepted this system of education would have been suicidal. The Hindu Society, therfore, acted very wisely in rejecting this system and repudiating the claims of absolute superiority put forward by Western culture. It ridiculed those purely dyed in colours of Western culture and thus saved the culture it cherished. Its children might receive this education for securing government service but its principles were not to enter into their social and religious life The teaching of history was especially so managed in schools that it should instil into the students" mind a sense of the inferiority of their nation and culture. The Hindus, therefore, looked at it with an eye of extreme suspicion. Consequently this education had no influence on his life and could not modify it for better.

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The Arya Samaj brought with it the rationalism of Europe without scepticism. It claimed to be the representative of the real ancient Hindu civilisation The conservation of the Hindu prompted him to oppose its teachings at first. But how could he have withstood the appeal of his own Shastras to his better self? By and by the rational and pure teachings of the Arya Samaj penetrated to the most orthodox bosom and have changed his beliefs for better in many respects. The Hindu is now shaking off his savish mentality. The credit, eighty per cent of it, of bringing about this healthy change belongs to the Arya Samaj, people have not as yet adequately realised the great part the Arya Samaj has played in dispelling the clouds of ignorance and superstition, in restoring the self-respect of the Hindu and in destroying his slavish mentality. Although the numerical strength of the Arya Samaj is not great, yet the currents of its powerful rational thought have been running strong everywhere and transforming the Hindu society for better.

The Hindu Maha Sabha and the Congress Leaders.

(By Mr. S. P. Kulyar.)

What a poor attendance of Hindu leaders there was in the last session of the Maha Sabha!

With the exception of Pandit Malviya and Swami Shradhanand all other Hindu leaders are Indians first, Indians last and—perhaps Hindus..... ..... They live for the Congress and they will die for the Congress--beyond the Congress there is nothing worthy of their attention. We may take it that Hinduism does not appeal to them.

It is not difficult to understand their mentality or to account for it; one word will explain all. They have it not in their blood, in their constitution, in their organism,--they are quite innocent of all religious zeal—the zeal of Mohammad--the zeal of Christ--the zeal of Buddha—that would—not mar your life like the fanaticism of a Mullah--but ennoble your life- raise it--purify it--and lead it to the service of others. For centuries long we have had no zeal and we cannot have it now for the wishing. It will demand a supreme effort——a strong will to produce it and than a careful nursing before it can grow into a trait of our character. Zeal! But zeal is a word of bad odour with some people. It so often passes for fanaticism. Perhaps some of your readers would turn upon me and say—have we not had enough of this zeal? Are not these riots and outrages the outcome of this very zeal which I am preaching? Let us make our meaning clear.

Some years ago I mentioned to a friend of mine that I was at that moment trying to obtain a license for keeping a gun. He said in a very grave tone that he did not like the idea. On my pressing for an explanation he said he knew a man who had recently lost

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his only son through keeping a gun. The boy had been reprimanded by the father and in a huff took the gun and shot himself. I thanked him for the hint and said that it was easy to give up the desire for the gun ; but how could any one keep boys from getting at knives, hatchets, axes and swords ? The wells too could be filled up, but the great Ganges and the Jumna--how could they be swept away to make it impossible for the boys to harm themselves ? When a man or a boy has determined to throw away his life he will not have to go long in search of an instrument. I too knew a poor ticket collector whose son—a mere child of 12 or so—threw himself before a running train and was instantly done to death and for what ? For a mere rebuke to mind his school lessons.

The truth is we confuse matters. We blame the gun when we ought to blame ourselves. Seldom will it be found that a suicide or a murder or any such serious act is the result of a sudden impulse. It is always the last act, the consummation of many such uncontrolled impulses that the man has been harbouring in his breast—unknown, unseen, uncared for, unguided. It is guidance that is needed. We should study psychology more and to better purposes. Weapons—these ought to give us education ! Till then it had not accurred to me how much good they can do to us. They can give us firmer nerves and a better control and a greater mastery over ourselves. With guns and swords in their hands our boys must learn to live and let live.

So it is not zeal that is at fault. It is want of guidance. The root of the matter lies there. We do not take sufficient pains to guide the energy of the people into right or safe channels. These riots are due to a remissness on the part of those who ought to have guided them aright—and also a remissness on the part of those whose duty it was to keep an eye over their activities. It cannot be the work of the rowdies alone. There must have been something more than the rowdy element to make an outrage of such dimensions possible.

A people's zeal must find a vent—if not through the good people—then through the bad people. If the good keep aloof, the bad will come in and take their place. Plato has well expressed the same truth. *If the wise and good will not govern the bad, the bad will govern the good and the wise.* That is inevitable. Choose your place, ye wise men.

Similarly if the wise and good among the Hindus will keep aloof from religion, the fool, and the ignorant will take the lead—and the wise and the good will have to submit and follow to where Folly and Ignorance may lead them. The question for consideration therefore is this :—

Is the religious sentiment of the people to be left uncared for and unguided ? The leaders may be from top to toe, only politically minded; they may not be religiously minded; but the people--the vast majority of them--are decidedly religiously minded and it would not be safe, it would not be wise, of the leaders to leave them to their own guidance. The leaders will not then be true to their duty. They must lead the people wholly and in all spherers

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not piecemeal now in this sphere, now in that. Man is a many-sided animal and if you care for him at all you must care for his whole being and not for this or that part of him. Politics cannot afford to neglect religion nor Religion afford to neglect politics. My contention is that if the leaders think that by neglecting or ignoring the religious instincts of the people they are suppressing and killing an undesirable trait or element in their character and are thus rendering a useful service to their country, I am afraid they are sadly mistaken. This religious instinct is an ineradicable instinct in man, you cannot extinguish it None *has been* able to do it and none *will* be able to do it. You must accept this fact-that people will practise religion *according to their lights*—that they will *worship* God -and they will *fight* for their God if need be. Since you cannot abolish God or His worship or His followers—the only thing left to you as leaders is to guide and control them and lead them to the right path. As Leaders your duty does not end with Politics. You must guide them in all their actions and activities—in politics, in religion, in education, in their fights and quarrels, even in their amusements and recreations. We do not advocate an aggressive policy; we do not ask our leaders to take up their lances and in the name of religion charge the nearest wind-mill they come across: no, none of these things, but neither would we like to see them sit unconcerned busying themselves with politics only — while our Religion and the things of our Religion go to the wall. Is their religion a thing in which they take no pride or of which they feel ashamed? If so, cast it away and at once. Get something nobler in its place. But we do not believe there is any one among us who entertains such a childish idea in his mind. We believe and sincerely believe that religion is dear to us all but it is dear to us only in our hearts. We do not make a parade of it. Even that is good but not altogether good. It is our plain duty to show to others—to impress upon them that we have our religion—that we live for it—that if necessary, we would die for it. So pure, so vital, so ennobling, so elevating should be our religion—an inspiration: a spiritual light, to lead us on to service of others. It should be something vital, something tingling, something burning within us, a living flame consuming all the evil tendencies of the mind and provoking all that is good and holy in us. No death-like inactivity—no indifference, no lukewarmness, that is pestilence. Learn from the brave Akalis, learn even for the moment, from our misguided brethren, the Mohamadens, learn to LIVE for your religion as well as for your country and for your people. There in alone lies Hope for us as a People, as Men, as spiritual beings, and not in being political animals only.

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THF SALVAGING OF CIVILISATION.

By H. G. Wells.

A REVIEW.

(Manmohanbai H. Desai)

Wells has come to be recognised as a great thinker and a master-force in the English literature of to-day. Novelist and thinker, Wells has a way of thought and expression which is direct, forceful and profound, on account of which he is in our day a great favourite especially with us in India. William Morris wrote a splendid book to tell us what an ideal world may be like and even today in socialistic literature, this book of his called News From Nowhere holds a prominent place. Morris' is the statement of a vision which it would not be wrong if we say Wells tries to materialise into practice by suggesting a method of world-Government. Wells would have a World State governed by the World People where education and happiness of human beings would be the most sacred concerns and where wars and hates would be spurned as devils to be eradicated with a ruthless hand. Wells' World State is what Morris' Ideal Society or Tagore's United States of the World mean. The central idea of all these three is practically the same, but the value of Wells' work lies in his suggestion of possible practicable means to arrive at a state of life in the world so vividly imagined by Morris or eloquently preached by Tagore. The Salvaging of Civilisation is a very able and thoughtful work of a great master. In this chaotic world of today, thinkers like Wells are a beacon-light for us to see rays of hope amidst profound darkness caused by wars and selfish political motives. In order to achieve his World State, Wells gives a great importance to propagandist work and for this, he would use the press, the books, the newspapers and above all he would recast our narrow system of education into one broad and comprehensive educational system which he would name the World-Education system. For this he would re-write the world-history and he has tried to suggest how it should be done by himself writing his famous work, the Outline of History. He would also synthetise the sciences and culture of the world into one World Culture on the basis of his project of World State. He would recast the Bible to be named the Bible of Civilisation consisting of

The Historical Books with maps and the like ;

The Books of Conduct and wisdom ;

The Anthologies of Poetry and Literature and finally

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The Book of Forecasts, taking the place of the prophets and Revelations ;

in short, the Magna Charta of the World-State which will serve as the pole star for the direction of the Ship which will, let us call it, be the Ship of World Civilisation. This is what Wells says.

"I would picture this revivifiied Bible to you as most carefully done and printed and made accessible to all, the basis of education in every school the common platform of all discussion—just as in the old bible used to be. I would ask you to imagine it translated into every language, a common material of understanding throughout all the world. And furthermore. I imagine something else about this—quite unlike the old Bible—I imagine all of it periodically revised. The historical books would need to be revised and brought up-to-date, there would be new lights on health and conduct, there would be fresh addition to the anthologies and there would be Forecasts that would have to be struck out because, they were realised or because they were shown to be hopeless or undesirable, fresh Forecasts would be added to replace them. It would be a Bible moving forward and changing and gaining with human experience and human destiny."

Wells gives a lucid summary of his idea of the World State at the end of the book in the short space of a couple of pages. He has nothing but censure for the present educational system of the world and rightly so Whatever may be the methods of education in other countries, it must be admitted that those in India are simply disgusting. Our system has the great drawback of repressing personality and creating a sort of slave-mentality in the child which becomes a great hamper to free and independent thinking. It is not education, we are having, but a mere rough-hewing of our brilliant parts into a most senseless medley of nonsense and rubbish. Wells will have "A dream not of *Individuals Educated*—we have thought too much of the individual educated *for* the individual—but of a *world educated* to a pitch of understanding and co-operation far beyond anything we know of today, for the sake of all mankind." And Wells has some really fine thoughts on the educational problems in a chapter called 'The Schooling of the World."

He also gives a lucid picture of the life led by the World Citizen in the World State which will be evolved in the future, and which according to him must evolve if we do not want to perish and be totally eradicated as human kind out of existence, for unless we chrystallise the social order into an idea of a World State whose SurpremeGod would be Peace and whose Arch-enemy, the War-Idea, we are bound with the almost anarchically chaotic state in which our world is today, to be effaced altogether from existence. He gives an eloquent picture in the book, of life under the World-State.

Wells' World-State will have no single individual human head. According to him "The linking reality of the World-State is much more likely to be not an individual but an idea—such an idea as that of a human common weal under the God of all

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mankind." He sketches the organism of the World-State as follows:—

There will be a Supreme Court determining not International Law, but World Law. There will be a growing code of World Law.

There will be a World Currency.

There will be a ministry of Posts, Transport and communications generally.

There will be a ministry, of Trade in staple products and for the Conservation and Development of the natural resources of the Earth.

There will be a ministry of World Health.

There will be am inistry, the most important ministry of all, watching and supplementing national educational work and taking up the care and stimulation of backward communities.

And instead of a War office and Naval and Military Departments, there will be a Peace ministry studying the belligerent possibilities of every new invention, watching for armed disturbances everywhere and having complete control of every armed force that remains in the world. All these world ministries will be working in co-operation with local authorities who will apply world-wide general principles to local conditions."

He does not think his idea of the World State a mere Utopia. He thinks it is as practicable as anything and he relies a great deal on propaganda through the Press, and thro' a recast system of not national, but world education which he discusses in the brilliant pages of this book. In his short resume of his thesis, he says:—

"We need, therefore, before all other sorts of organisations educational organisations; we need, before any other sort of work, work of education and enlightenment; we need everywhere active societies pressing for a better, more efficient conduct of public schooling, for a wider, more enlightening school curriculum, for a world-wide linking up educational systems, for a ruthless subordination of naval, military and court expenditure to educational needs, and for a systematic discouragement of mischief-making between nation and nation and race and race and class and class. I would wish to see Educational Societies organised as such, springing up everywhere, watching local bodies in order to direct economies from the educational starvation of a district to other less harmful saving: watching for obscurantism and reaction and mischievous nationalist teaching in the local schools and colleges and in the local press; watching members of parliaments and congressmen for evidences of educational good-will or malignity; watching and getting control of the administration of public libraries; assisting when necessary in the supply of sound literature in their districts, raising funds for invigorating educational propaganda in poor countries like China and in atrociously educated countries like Ireland, and corresponding with kindred societies thro' out the world."

I 'll give one more excerpt regarding what Wells thinks to be the most

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urgent need of the day. "Human life" says he "will continue to be more and more dangerously chaotic until a world social idea chrystallises out. That and no existing institution and no current issue—is the primary concern of the present age."

If we think over the history of the last ten years with its great war, its peace problems, the Ruhr troubles and the labour problems—a history of Discontent writ all over the world, we must feel with Wells that the world does need the Salvaging of its civilisation very badly and yet in 1923, we are as far off from an ideal society as possible. Europe has still more men under arms than it had ever before the war. The independent nations are as keen as ever in their race for armaments in spite of Naval Disarmament Conferences and the nations ever ready with the slightest pretext to be on the war-path. The world-atmosphere is surcharged with seething discontent and with a militant and distrustful aggressiveness towards one another due to distrust and perverse propaganda. Indeed, never did the world stand in such great need of overhauling its own civilisation before as it does to-day. Can we with our spiritual and catholic minds not head for this goal?

MY INDIA.

(By Pt. Parmanand B. A.)

What a dear expression! 'My heart leaps up in joy'. 'My own, my native land'. 'Dearer than Heaven itself'. But jealous am I. My India is not the dream of the boundary-ridden patriots. Nor is it the 'golden sparrow' of a world bent on political and economical exploitation. With equal force I would repudiate India, a poor copy of the civilized Occident. I am sick of all such platitudes and sophistries. The very word India jars on my ears. For want of a more popular and better-understood word, I have adopted it almost inspite of myself. I am sorry for the limitations which the use of this word imposes on me. But gentle reader! if you bear with me. this word won't stand in my way and my say will be said.

To me India is a culture, a polity. It is the dream of the gods of the Bhagavata, if it is a country at all. It may be Bharata Varsha. But I would prefer Aryavarta. Oh! what holy associations are connected with this name! The moment you utter this sacred symbol, you really conjure up all that is best and noblest in human life. Geographical limits disappear. You become in tune with the Infinite. Political philosophers would dub it idealism. They jeer and sneer at Gandhi's idealism. But where is a greater man today than Tagore, Gandhi and on a smaller scale Vaswani. Dayananda's Aryavarta is a Utopia to many! But you also talk of an Asiatic federation, a world federation of free people. You too revel in painting the

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picture of a world-wide labour organisation with ramifications all over. The more cunning of you make the farce of a league of nations. The bustle and turmoil, the buzz of a warring world constantly disturbs your sleep and haunts you like a shadow and then the divine in you turns back (though rarely) to a more peaceful order of things and in still better moments, to God, the embodiment of peace. But my Aryavarta presents a different picture. From the realm of bloody conflict you at once soar high into a domain where equal opportunities are afforded to the meanest and the highest, where storms and strifes are unknown, where there is a real brotherhood of man and man, where there is a struggle for duties and not one for rights, where your pet pan-Islamism, pan-Hinduism all shudder and shrink. The very word Arya betokens harmony and humanity

Yes, the Land of Aryans! The vision gets expanded, the horizon becomes brighter. As the sun rises in the East, so does civilisation too take its birth in my Aryavarta. To me it connotes a happy synthesis of material, moral and spiritual interests of man but a triumpth of the 'I' over the 'It' as represented in the person of Dionysis, the penniless sage who brought the proud Alexander at his feet. Even such is the conquest of the West by the East. The thinking mind of Europe rejoices over it and is proud of the Aryan origin. So is J. K. Nariman, the distinguished Parsi delegate to the last Hindu (should I call it Arya ?) Mahasabha conference at Benares. Says he:—".....The conference was a splendid success—thoroughly representative of the whole conglomeration of Aryan civilization— .....

"It (the movement only endeavours to bring the various limbs of the Aryan body. I am glad that the word Aryan is deliberately and advisedly used in the resolution. I wish the movement takes on the character of an Aryan movement, Hinduism being its main branch. I hold that my religion has many points of similarity as well as of identity with Hinduism theological as well as sociological, that Hinduism and Zoroastrianism are two branches of the Aryan religion. I pray the Aryan movement may become strong, so that a federation of Aryan religions may influence Indian and world history..... .....If properly worked it may lead the world to peace and happiness."

The view set forth above, though making the closest approach to the tradition of Aryavarta, still savours too much of religious aggressiveness and dogmatism. A certain federation defined and narrowed by notions of Geograpy and earthly considerations is as much a menace to the world as a possible source of peace and happiness. A more faithful delineation would be a self-contented, valiant, dry, dutiful, and literate India as proclaimed by Ashvapati the Great of Kekaya fame.

Pooh! Pooh! They make a dumb, inarticulate lamb of the glorious Bharatavarsha. They would have Aryans speak through other tongues. Politics they would borrow, patriotism they would import, but as if that was not enough, the language also which they use and the idioms and sentiments express would be outlandish. And are they not out for delivering their country

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from the foreign yoke ? The children of the soil aspire to be free, leaving the mother-tongue in chains and consigning it to oblivion ! But am I myself not similarly atrocious to my mother-speech? Yes and the extent to which I do so in common with my countrymen, I stand in the way of the fulfilment of my country's destiny. The young-folk of India would have their private correspondence and other transactions in English. 'My dear papa' is a dearer expression to them than any their simple mother-tongue could afford. Well may Gandhi exclaim that his blood boils within him when he sees any boy writing to his father in English. And well may Bhai Paramanand bend his head in shame before his American friends who rushed in joy to see a letter that had come to him from India but alas it was couched in English ! As if India had no medium of communication, it was dumb ! I shrug my shoulders and say this is not my India, far less my Aryavarta. This Aryavarta has a beautiful language all its own, once spoken throughout the length and breadth of the world. Professor Max Muller admits it to be the eldest sister, if not the mother, of all Indo-European languages.

Let alone Aryavarta, my India is not the one generally known. If anywhere, it dwells in villages and hamlets. It is in the sweet chant of some ancient devotional song sung in the early hours of the morning to the accompaniment of the grinding-stone as the peculiar musical instrument of Indian ladies both married and widowed. It is in the humming sound of the spinning wheel that spins into one thread chastity, feminine modesty and honorable living. Your flour-mill has robbed India of its grindstone. Your Lalimlis and Dhariwal have dealt a death-blow to the spinning wheel of my indigent mothers and the handloom of my workless village weaver and peasant, what to say of the capitalist tyrant of the West who has now brought his shuttle at my very door.

In cities, you would see India finding expression in the Seva Samities, social service leagues. Truly the sweating millionaire with a bucket of cold water sometimes iced and sometimes mixed with *gur* or sugar at some noon train or late in the night represents my India better and more faithfully than my clean-shaven brother of some English University with a hotel bill against his father. The opulent and affluent brother of my ancient India would spend little or nothing on his personal comforts or luxuries. No. Here is a *serai* constructed by some *lala* of revered memory for the weary traveller. There you find a well and a big tree overhanging it for the thirsty and sun-burnt pilgrim. A beautiful garden catches your eye next but the owner seldom takes anything out of it for his personal use. Every thing is for the village folk and the rambling Sadhu. What care I if I don't get in some remote village the long list of vegetables or fruit which, strangely enough, have come to include eggs and fish in the food provisions of a modern city like Lahore. My old fashioned landlord is content with his *sarson-ka-sag* and *lassi* (curdled milk). Today German and American doctors prescribe this *lassi* for longevity. What if his house is less ventilated, unphenyled, unwhite-washed and uncemented ! It is all the same a stranger to the

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hundred-and-one diseases, to your old-new Dingu fever, to fashionable pthysis, pneumonia, influenza and what not. It is a real blessing that he knows little about thermometre. How many die before death on account of the panic created by this little play thing of yours? Sandow's Grip-bells and chest-expanders are hardly necessary, so also the paraphernalia of gymnastics and costly games. Indian exercises and games are invariably better substitutes, such is his experience. Your newspapers and telegrams spread sensation and heart-burnings all around, why should he not commune with his God all this while. And His simplicity entitles him to such communion. You boast of your railways and steam-engines but at the same time you send away your cow and your horse to some European. My old-fashioned brother has both of them and used to ride in a right royal fashion till only recently. His cow-milk brought him better health and greater nutrition than all your coffees, and cocoas, and chocolates put together. He can tell the hour of the day by the shadow of the sun and the motions of the stars; what avails your regulator to him? He has no Albert hair, no Curzonian fashion, about him, but does not the ruddy glow on his cheeks make him look better? Collars and neckties, why should he have them? My Jaimal Singh and Fateh Singh kept their heads erect before monarchs like Akbar and being comparatively less crooked, my uncivilized villager can even stand erect before God. High-soled boots have proved the curse of many a European lady's eyes, so says Gandhi, and yet the contagion is fast spreading among the un-Indian butterflies of our ladies. Rightly does my ignorant brother of the village scorn the Dawson boots. It smells of Christianity in his simple way of putting it. Your *pant* is too light for him and out-of-place in a country like India where with a little exertion you begin to perspire. And what purpose will these socks serve with the nasty smell they emit the third day? The villager thanks his stars for freedom from such fashions and frivolities. The hunting coat of the moderner has also little charm for him It is below his dignity to bring down little sparrows, pigeons and doves with his revolver or gun. Why should he not take to the more manly sport of lions and tigers if the hunting coat means any such thing? Your kerosine oil, Ditmars also, he knows not. neither has he any need to spoil his eyes by waking long nights. In short, plain living and high thinking constitute my India. Aryavarta is something still higher.

I pause and a voice from the sky comes into my ears :—

In this Aryavarta lies the salvation of this gifted Aryan nation and the world at large.

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CONTEMPORARY THOUGHT REVIEWED.

THE ARYAN LAWS OF MARRIAGE AND MODERN PHYSICIANS.

As western science progresses, it brings to light more and more evidence in support of the principles laid down in the Aryan Shastras. Between the conclusions arrived at and theories formulated by modern doctors and physicians on the one hand, and rules prescribd for the guidance of man kind by seers of ancient times on the other, there are differences only in minor details. One wonders as one finds the greater points of agreement and in contrast only smaller ones of difference, and asks how those sages, in what is called an unscientific age, could make discoveries which science with its elaborate apparatus and well-equipped laboratories, is after centuries of laborious experiments and observations, constrained simply to repeat.

Of all human relations, marriage is of the greatest importance. On it depends the stability of human society. The very continuance of the human race is bound up with the maintenance of the purity of this tie. Scientists have for long been busy in studying the physiological and psychic effects of these unions and have arrived at some very important results. Thus Doctor George H. Napheys, A.M., M. D. in his *Physical Life of Woman* :—

THE DISTINCTION OF THE SEXES.

The frame of woman is shorter and slighter. In the United States the men average five feet eight inches in height, and one hundred and forty-five pounds in weight, the women, five feet two and a half inches in height, and one hundred and twenty-five pounds in weight. Man has broad shoulders and narrow hips; woman has narrow shoulders and broad hips. Her skull is formed of thinner bones, and is in shape more like that of a child. Its capacity, in proportion to her height, is very little less than in man, —about one-fiftieth, it is said,—which, so far as brain-power is concerned, may readily be made up by its finer texture. Her shoulders are set farther back than in the other sex, giving her greater breadth of chest in front. This is brought about by the increased length of her collar-bone; and this is the reason why she can never throw a ball or stone with the accuracy of a man. Graceful in other exercises, here she is awkward.

Her contour is more rounded, her neck is longer, her skin smoother, her voice softer, her hair less generally distributed over the body, but stronger in growth than in man. She breathes with the muscles of her chest--he with those of his abdomen. He has greater muscular force—she more power of endurance. Beyond all else she has the attributes of maternity,—she is provided with organs to nourish and protect the child before and after birth

THE AGE OF MARRIAGE.

Such circumstances as hasten the advent of puberty are, says the doctor, fatal to the full development of both man and woman. Among these he enumerates the following:—

Whatever *stimulates the emotions* leads to an unnaturally early sexual life. Late hours, children's parties, sensational novels, 'flashy' papers, love stories, the drama, the ball-room, talk of beaux, love, and marriage,—that atmosphere of riper years which is so often and so

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injudiciously thrown around childhood, —all hasten the event which transforms the girl into the woman. A particular emphasis has been laid by some physicians on the power of music to awaken the dormant susceptibilities to passion, and on this account its too general or earnest cultivation by children has been objected to. Educators would do well to bear this caution in mind.

The reader will see the wisdom of the ancients in prohibiting indulgence in music by the *brahmachari*.

Puberty, however, is no sign of the bility of the girl to bear a child. Says he doctor: —

It does not follow, because a girl is capable of marriage, that she is fit for it. Science teaches us many valid objections to too early unions. It goes farther, and fixes a certain age at which it is wisest for woman to marry. This age is between twenty and twenty-five years.

Anatomists have learned that after puberty the bones of a woman's body undergo important modifications to fit her for child-bearing. This requires time, and before twenty the process is not completed. Until the woman is perfect herself, until her full stature and completed form are attained, she is not properly qualified to assist in perpetuating the species.

From statistics which have been carefully compiled, it is proven that the first labours of very young mothers are much more painful, tedious, and dangerous to life, than others. As wives, they are frequently visited either with absolute sterility, and all their lives must bear the reproach of barren women, or, what to many is hardly less distasteful, they have an excessively numerous family.

What adds to their sufferings in the latter event, is that the children of such marriages are rarely healthy. They are feeble, sickly, undersized, often with some fault of mind or body which is a cross to them and their parents all their lives. They inherit more readily the defects of their ancestors, and as a rule, die at earlier years than the progeny of better-timed unions.

Is this not a repetition of the wholesome injunction given in Sushrut :—

ऊनषोडशवर्षायामप्राप्तः पंच विंशतिम् ।
यद्याधत्ते पुमान् गर्भं कुक्षिस्थः स विपद्यते ॥
जातो वा न चिरं जीवेत् जीवेद्वा दुर्बलेन्द्रियः ।
तस्मादत्यन्त बालायां गर्भाधानं न कारयेत् ॥

SPOUSES TO BE CHOSEN FOR LIFE.

Once forged, the bond of marriage should last for life.

We have said love is a necessity in the life of either man or woman to complete their nature. Its effects, therefore, are eternal. We do not intend this as a figure of speech. It is a sober statement of physiology.

From the day of marriage the woman undergoes a change in her whole structure. She is similar to her former self, but not the same. It is often noticed that the children of a woman in her second marriage bear a marked resemblance to her first husband. In the inferior races and lower animals this obscure metamorphosis is still more apparent. A negress who has borne her first child to a white man, will ever after have children of a colour lighter than her own. Count Strzelewski in his Travels in Australia, narrates this curious circumstance. A native woman who has once had offspring by a white man, can never more have children by a male of her own race. Dr. Darwin relates that a male zebra was once brought to England, and a hybrid race marked by the zebra's stripes, was produced from certain mares. Always

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after, the colts of those mares bore the marks of the zebra on their skins. In some way the female is profoundly altered throughout her whole formation, and entirely independent of her will, by the act of marriage, and the alteration is never effaced.

If the body is thus influenced, shall not the far more susceptible mind and spirit be equally impressed ?

Another common observation supports what we say, and extends it farther, Not the woman alone,—the man also undergoes a change, and loses a portion of his personality in his mate. They two are one, not merely in a moral sense. We constantly notice a decided resemblance in old couples who have passed, say two score years together. They have grown to look alike in form, feature, and expression. That for so long a time they have breathed the same air, eaten the same fare, and been subjected to the same surroundings, explain this to some extent. But the greater part of the change flows from mental sources. They have laughed and wept together ; they have shared the same joys and pleasures ; a smile or a tear on the face of one evoked a corresponding emotion and expression on the face of the other. Their copartnership has become a unity. Even without speaking, they sympathize. Their souls are constantly *en rapport*. The man is as different as the woman from his former self.

We cherish the memory of a lady of strong character, who died past eighty. She had survived three husbands, 'The first', she said, 'I married for love, the second for position, the third for friendship. I was happy with them all.' But when, in her mortal illness, this venerable friend sank into the delirium which preceded death, she constantly called out the name of her first husband only. More than half a century had not effaced the memory of those few years of early love. This is fidelity indeed.

On Divorce.

The opinion of the doctor as regards divorce is a positive repudiation of the allowance that certain religions and states are making for human fickleness.

Whether we look at it as a question in social life, in morals, or in physiology, the American plan of granting absolute divorces is dangerous, and destructive to what is best in life. It leads to hasty, ill assorted matches, to an unwillingness to yield to each other's peculiarities, to a weakening of the family ties, to a lax morality. Carry it a trifle farther than it now is in some of the Western States, and marriage will lose all its sacredness, and degenerate into a physical union, not nobler than the crossing of flies in the air.

Separation of bed and board should always be provided for by law ; and whether single, married, or separated, the woman should retain entire control of her own property. But in the eyes of God and nature, a woman or a man with two faithful spouses living, to each of whom an eternal fidelity has been plighted, is a monster.

On Polygamy and Polyandry.

What has been said of divorce applies with tenfold force to the custom of a woman living as wife to several men, or of a man as husband to several women. We should not speak of these customs, but that we know both exist in America, not among the notoriously wicked, but among those who claim to be the peculiarly good—the very elect of God. They prevail, not as lustful excesses, but as religious observances.

It is worth while to say that such practices lead to physical degradation. The woman who acknowledges more than one husband is generally sterile ; the man who has several wives has usually a weakly off spring, principally males. Nature attempts to check polygamy by reducing

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the number of females, and failing in this, by enervating the whole stock. The Mormons of Utah would soon sink into a state of Asiatic effeminacy, were they left to themselves.

Marriages between Cousins.

There is a difference of opinion among doctors as regards the physiological advisability or otherwise of allowing marriages between cousins. Ourdoctor is, subject to certain limits, in favour of such unions.

Hardly any point has been more warmly debated by medical men. It has been said that in such marriages the woman is more apt to be sterile; that if she has children, they are peculiarly liable to be born with some defect of body or mind,—deafness, blindness, idiocy, or lameness; that they die early; and that they are subject, beyond others, to fatal hereditary diseases, as cancer, consumption, scrofula etc.

An ardent physician in America persuaded himself so throughly of these evils resulting from marriage of relatives, that he induced the Legislature of Kentucky to pass a law prohibiting it within certain degrees of consanguinity. Many a married couple have been rendered miserable by the information that they had unwittingly violated one of nature's most positive laws. Though their children may be numerous and blooming, they live in constant dread of some terrible outbreak of disease. Many a young and loving couple have sadly severed an engagement, which would have been a prelude to a happy marriage, when they were informed of these disastrous results.

For all such we have a word of consolation. We speak it authoritatively, and not without a full knowledge of the responsibility we assume.

The fear of marrying a cousin, even a first cousin, is entirely groundless, provided there is no decided hereditary taint in the family. And when such hereditary taint does exist, the danger is not greater than in marrying into any other family where it is also found. On the contrary, a German author has urged the propriety of such unions, where the family has traits of mental or physical excellence, as a means of preserving and developing them,

So far as sterility is concerned, an examination of records shows, that whereas in the average of unions one woman in *eight* is barren, in those between relatives but one in *ten* is so. And as for the early deaths of children, while on an averge, fifteen children in a hundred die under seven years, in the families of near-related parents but twelve in a hundred is the mortality.

The investigations about idiotic and defective children are by no means satisfactory, and are considered by some of the most careful writers as not at all proving a greater tendency to such misfortunes in the offspring of cousins. Among a thousand idiotic children recently examined in Paris, not one was descended from a healthy consanguinity.

But as families are wholly without some lurking predisposition to disease, it is not well, as a rule, to run the risk of developing this by too repeated unions. Stock-breeders find that the best specimens of the lower animals are produced by crossing nearly-related individuals a certain number of times; but that carried beyond this, such unions lead to degeneracy and sterility. Such, also, has been the experience of many human families.

The consideration that has led Arya law-makers to prohibit consanguinous marriages is not simply physiological, on which phase of the question, too, it is possible to hold more opinions than one. The greater objection to such matches is social. Once you permit unions bet-

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ween near relations, the purity of the relation of a sister and brother vanishes. What prevents children of the same parents from marrying each other is exactly the consideration that makes wedlock between cousins repugnant to refined ideas of consanguinous morality. As to the preservation and development of traits of mental or physical excellence, which the German doctor referred to aims at in recommending marriages among cousins, our seers have made ample provision for it by attaching greatest merit to *Savarna vivah i. e.*, marriage in one's own class, misnamed caste.

THE MARRIAEGEABLE AGE OF MAN.

The epoch of puberty comes to a boy at about the same age it does to a girl,—fourteen or fifteen years. And an even greater period passes between this epoch and the age it is proper for a man to marry,—his age of nubility.

Not only has he a more complete education to obtain, not only a profession or trade to learn, and some property to accumulate, some position to acquire, ere he is ready to take a wife, but his physical powers ripen more slowly than those of woman. He is more tardy in completing his growth, and early indulgence more readily saps his constitution.

Previous to the twenty-third year, many a man is incapable of producing healthy children. If he does not destroy his health by premature indulgence, he may destroy his happiness by witnessing his children the prey to debility and deformity. An old German proverb says, 'Give a boy a wife, and a child a bird, and death will soon knock at the door.' Even an author so old as Aristotle warns young men against early marriage, under penalty of disease and puny offspring.

From the age of thirty-three to fifty years, men who carefully observe the laws of health do not feel any weight of years. Nevertheless, they are past their prime. Then also, with advancing years, the chances of life diminish, and the probability increases that they will leave a young family with no natural protector. The half-century once turned, their vigour rapidly diminishes. The marriages they then contract are either sterile, or yield but few and sickly children. Many an old man has shortened his life by late nuptials; and the records of medicine contain accounts of several who perished on the very night of marriage.

The reader will remember that the age between the twenty-fourth and the forty-eighth year is the period recommended by our *rshi* in which a man may be allowed to marry.

THE TIME OF MARRIAGE.

The rule laid down in the *Shastras* as regards the season of marriage is when the sun is in the Uttarayan. The opinion of our doctor on this point is:—

Woman, when she marries, enters upon a new life, and a trying one. Every advantage should be in her favour. The season is one of those advantages. Extreme heat and extreme cold both wear severely on the human frame. Mid-winter and mid-summer are therefore alike objectionable, especially the latter.

Spring and fall are usually chosen, as statistics show, and the preference is just. On the whole, the spring is rather to be recommended than the autumn. In case of a birth within the year, the child will have attained sufficient age to weather its period of teething more easily ere the next summer.

It almost appears as if there were but one season for generation, that in which the sun re-warms and vivifies the earth, trees dress in verdure, and animals respire the soft breath of spring. Then

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every living thing reanimates itself. The impulse of reproduction is excited. Now, also, its gratification is most beneficial to the individuals, and to the species. Children conceived in the spring-time have greater vitality, are less apt to die during infancy, than those conceived at any other time of the year. The statistics of many thousand cases, recently carefully collected in England, prove this beyond peradventure. It is well known that a late calf, or one born at the end of the summer, is not likely to become a well-developed and healthy animal. This has been attributed to the chilling influence of approaching winter; but it is capable of another and perhaps, a truer explanation. Nature's impulses, therefore, in the spring of the year are for the good of the race, and may then be more frequently indulged without prejudice to the individual. Summer is the season which agrees the least with the exercise of the generative functions. The autumn months are the most unfruitful. Then, also, derangements of the economy are readily excited by marital intemperance.

The Marriageable Age of Woman

The Shastras have prescribed the sixteenth as the earliest and the twenty-forth as the latest year of a woman's life for marriage. The same appears to be the counsel of modern science to women.

The age of a wife at the time of marriage has much to do with the expectation of children. As the age increases over twenty-five years, the interval between the marriage and the birth of the first child is lengthened. For it has been ascertained that not only are women most fecund from twenty to twenty-four, but that they begin their career of child-bearing sooner after marriage than their younger or elder sisters. Early marriages (those before the age of twenty) are sometimes more fruitful than late ones (those after twenty-four). The interesting result has further been arrived at in England, that about one in fourteen of all marriages of women between fifteen and nineteen are without offspring; that wives married at ages from twenty or twenty-four inclusive are almost all fertile; and that after that age the chances of having no children gradually increase with the greater age at the time of marriage.

There are two kinds of sterility which are physiological, natural to all women, —that of young girls before puberty, and that of women who are past the epoch of the cessation of the menses. In some very rare cases, conception takes place after cessation. In one published case, it occurred nine months afterwards, and in another eighteen months. In some very rare cases, also, conception has taken place before the first menstruation.

The older a woman is at the time of her marriage, the longer deferred is the age at which she naturally becomes sterile. She bears children later in life, in order to compensate, as it were, for her late commencement. But although she continues to have children until a more advanced age than the earlier married, yet her actual child-bearing period is shorter. Nature does not entirely make up at the end of life for the time lost from the duties of maternity in early womanhood; for the younger married have really a longer era of fertility than the older, though it terminates at an earlier age.

It has been asserted that compound pregnancies are more frequent in certain years than in others. But that which seems to exert the greatest actual influence over the production of twins is the age of the mother. Very extensive statistics have demonstrated that, from the earliest child-bearing period until the age of forty is reached, the fertility of mothers in twins gradually increases. Between the ages of twenty and thirty, fewest wives have twins. The average age of the twin-bearer is older than the general run of bearers. It is well known

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that by far the greater number of twins are born of elderly women. While three-fifths of all births occur among women under thirty years of age, three-fifths of all the twins are born to those over thirty years of age. Newly-married women are more likely to have twins at the first labour the older they are. The chance that a young wife from fifteen to nineteen shall bear twins is only as one to one hundred and eighty-nine; from thirty five to thirty-nine the chance is as one to forty-five,—that is, the wives married youngest have fewest twins; and there is an increase as age advances, until forty is reached.

Effects of Heredity.

The precautions recommended by Manu to would-be husbands, and by Dayananda to would-be wives as well, find an echo in the laws enunciated under this head by our doctor.

1. First as to physical characteristics.

In general, it may be said that there exists a tendency on the part of the father to transmit the external appearance, the configuration of the head and limbs, the peculiarities of the senses, and of the skin and the muscular condition; while the size of the body, and the general temperament of constitution of the child, are derived from the mother. Among animals, the mule, which is the produce of the male ass, and the mare, is essentially a modified ass, having the general configuration of its sire, but the rounded trunk and larger size of its dam. On the other hand, the hinny, which is the offspring of the stallion and the she-ass, is essentially a modified horse, having the general configuration of the horse, but being a much smaller animal than its sire, and therefore approaching the dam in size as well as in the comparative narrowness of its trunk. The operation of the principle, though general, is not universal. Exceptions may easily be cited. In almost every large family it will be observed that the likeness to the father predominates in some children, while others most resemble the mother. It is rare to meet with instances in which some distinctive traits of both parents may not be traced in the offspring.

A peculiar aptitude for procreation is sometimes hereditary. The children of prolific parents are themselves prolific. It is realated that a French peasant woman was confined ten times in fifteen years. Her pregnancies, always multiple, produced twenty-eight children. At her last confinement she had three daughters, who all lived, married, and gave birth to children,—the first to twenty-six, the second to thirty-one, and the third to twenty-seven. On the contrary, sometimes a tendency to sterility is found fixed upon certain families, from which they can only escape by the most assiduous care.

Deformities are undoubtedly sometime transmitted to the progeny. It is by no means rare to find that the immediate ancestors of those afflicted with superfluous fingers and toes, club-feet, or hare lips, were also the subjects of these malformation. There are one or two families in Germany whose members pride themselves upon the possession of an extra thumb; and there is an Arab chieftain whose ancestors have from time immemorial been distinguished by a double thumb upon the right hand. Darwin gives many similar instances. A case of curious displacement of the knee-pans is recorded, in which the father, sister, son, and the son of the half-brother by the same father, had all the same malformation.

2. Inheritance of mental Equipment.

Of six hundred and five names occurring in a biographical dictionary devoted to men distinguished as great founders and originators, between the years 1453 and and 1853, there were, as has been pointed

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out by Mr. Galton, no less than one hundred and two relationships, or one in six. Walford's *Men of the Time* contains an account of the distinguished men in England, the Continent, and America then living. Under the letter A there are eighty-t-five names, and no less than twenty-five of these, or one in three and a half, have relatives also in the list; twelve of them are brothers, and eleven fathers and sons. In Bryan's *Dictionary of Painters*, the letter A contains three hundred and ninety-one names of men, of whom sixty-five are near relatives, or one in six; thirty-three of them are fathers and sons, and thirty are brothers. In Fetis's *Biographie Universelle des Musiciens*, the letter A contains five hundred and fifty names, of which fifty are near relatives, or one in ten. Confining ourselves to literature alone, it has been found that it is from one to six and a half that a very distinguished literary man has a very distinguished relative; and it is from one to twenty-eight that the relation is father and son or brother and brother respectively. Out of the thirty-nine Chancellors of England, sixteen had kinsmen of eminence; thirteen of them had kinsmen of great eminence. These thirteen out of thirty-nine, or one in three, are certainly remarkable instances of the influence of inheritance. A similar examination has been instituted in regard to the judges of the Supreme Court of Massachusetts, and other American States, with like results. The Greek poet Œschylus counted eight poets and four musicians among his ancestors. The greater part of the celebrated sculptors of ancient Greece were descended from a family of sculptors. The same is true of the great painters. The sister of Mozart shared the musical talent of her brother. As there are reasons, to be detailed hereafter, for believing that the influence of the mother is even greater than that of the father, how vastly would the offspring be improved if distinguished men united themselves in marriage to distinguished women for generation after generation!

GLIMPSES OF DAYANANDA.

XIII

A PHYSICAL COLOSSUS.

Dayananda's greatness lay not in his intellectual and spiritual excellences alone, his body, too, was no less a prodigy of physical strength. As he stood amidst large concourses of people, he could easily be distinguished by his towering height. The make of his whole body was gigantic. He had a bulky constitution, which, however, continuous exercise and asceticism had wrought into a solid mould of prowess and power. In his movements he was agile. As he went out for his morning constitutionals, thosethat accompanied him had literally to run.

'Sound mind in a sound body' was the maxim that Dayananda in his person typified. Yogis there are, who by continued fasts and self-tortures, emaciate all their limbs, so that for the purposes of physical activity, they are no better than a bare skeleton, incapable, or as some have the hardihood to assert, infinitely incapable, of strenuous exertion. Such, however, was not Dayananda's idea of *Yoga*. In his early years, before he had the good fortune to knock

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at the door of the hermitage of his sage Guru, Virajananda, he had learnt all the physical exercises of *Yoga*, and as he somewhere candidly admits, had derived great benefit from them. Yet what is physical is barely physical. Of real *Yoga*, which Patanjali defines as the restraint of inner and outer organs, moral rectitude is the first and foremost factor. Among *Yamas* and *Niyamas*, which according to the author of the Yoga Darshan, are the first rungs of the ladder of *Yoga*, there is prescribed *Swadhyaya*, which commentators iterpret as the study of the Veda. Thus in order to be a *Yogi*, in the sense in which *Rshis* use the term, exertion, physical as well as mental, is necessary. Both these presuppose a sound body and a sound brain. Among one of the achievements of *Yogis* is mentioned आरोग्य, *i. e.*, freedom from disease. And in case a *Yogi* should rivet his attention on his body, he is said to acquire, by the continuation of that attention, an adamantine physical frame.

Such, too, appears to have been the ideal of our ancestors during, and before, what are termed in history the Epic Ages of India. The Arya warriors of old were not the human automatons that are driven mechanically to the fields of battle to-day. The work of fighting for the country was, under the old *Varnashram* system, entrusted to *Kshatriyas*, who were *Dvijas* or twice-born, having passed through a second birth by undergoing a course of intellectual and spiritual training at some *Gurukula*. Patriotism was in those times an intelligent sentiment which none but the educated had the right to cherish and profess. Those that incited men to bloodshed under holy pretences of 'maintenance of liberty, 'love of the motherland,' etc., etc., were themselves responsible for keeping that spirit intact amidst revolting barbarities of war. The development of intellect had, thus, to go hand in hand with the development of the body.

Dayananda who has, by a devotee of his, been characterised as a glimpse of the good old India of the time of *Rshis*, typified, in him, like his forbears of old, harmonious working of all the human powers that conjointly make for perfect human growth. He was a refutation incarnate of the idea, that had of late begun to gain ground, that physical strength and prowess were inconsistent with a keen intellectual acumen. Those that are spiritually great should also be physically great. Sunken eyes are no doubt an indication of nocturnal vigils. They, however, harbinger, also, an early imbecility, which is sure to hasten a premature decadence of the intellect. The work that Dayananda had set before himself was gigantic. It required, for its accomplishment, a gigantic physique, with gigantic capabilities of enduring gigantic strains. A few years before his death he could point to the havoc that constant exertions had worked on his once colossal body. That he could endure such incessant exertion of both body and mind up to the end of his life was due to the early care that he had during his period of preparation, or what some call probation, for apostleship, bestowed on his gradually but harmoniously growing constitution. He had consciously developed it, consciously strengthened it, consciously hardened it, till the process

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of deliberate development had given him a whole, unbroken and unbreakable, vehicle of work.

Innumerable are the feats of strength that Dayananda performed and to which witnesses are found even today among old men of some of the places which he had the occasion to visit. It was at Jullundhur that Vikram Singh, one of the big landlords of the place, a *reis*, asked of Dayananda some physical proof of the prodigious powers with which he used always to credit practisers of *brahmacharya*. And the sage, instead of giving an answer, was, silent. After a while, the Sardar made preparation to go somewhere' and a carriage, drawn by a pair of horses, was made ready for him. The Sardar sat in it, and the syce made sign to the animals to start. Finding them loth to move, he whipped them, but their obduracy was unconquerable. Looking behind, what should he see but that Dayananda stood holding one of the wheels with his hand, making it impossible for the carriage to move.

At Wazirabad in the course of a lecture, he held up his hand and called to the wrestlers that had mustered strong in the audience, to come and lower it. None of those present had the courage to answer the challenge.

Passing through a lane he was, all of a sudden, confronted by a huge bullock, which, from its reddened eyes, appeared to be infuriated. Nothing daunted he pressed on, while his companions stood behind, thinking to find out some way of avoiding the ferocious beast. Later when they had joined him,—in what way they crossed that lane blocked by the beast, is not known—one of them inquired of the sage as to what he would have done if the animal had attacked him. He closed both his fists and said, he would catch it thus by the horns and force it back.

A constable, who had kept watch for the night, sank, terrified on the ground as he perceived the gigantic figure of the sage advancing towards him in the early dusk of the dawn, when the *rshi* was probably returning from his *yogic* meditation in some silvan solitude.

At Karanvas he made objection to the *ras lila*, or dance performance of characters representing Shri Krishna and Radha, arranged under the orders of a Thakur, by name Karan Singh. The latter, getting incensed, came to the habitation of the sage, armed with his sword, and after a furious altercation, actually advanced to strike him, when lo ! the sage leapt from his seat, and with the alacrity of a practised warrior, wrested the sword from the rude assailant's hand, and resting it on the ground pressed it so that it broke in two.

Dayananda never aggressed in fighting. Nor did he ever evince a desire of making show of his physical indomitability. Even when acting on the defensive he invariably spared his opponent. His sublime vow of Sanyas prevented him from pressing his advantage further. Yet the consciousness that he had with him an immense store of strength on which he could draw at the time of need, made for self-reliance, so that he went about quite undaunted, wherever and whenever exigencies of

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his mission to spread Vedic culture drove him, often alone in the face of odds.

Physical power, to-day, is the dire need of society. In fields, political, religious and communal, strong invincible bodies are in great requisition. They will aid in fighting patriotic battles. They will save communities from the onsets of other communities. They will, above all, help in carrying the message of the True Faith to lands where barbarism rules, and culture, unless it has, to shelter it, if need be, an invulnerable shield in the shape of a strong physical constitution, is sure to succumb. Let Dayamanda then, the Dayananda that was indomitable, as much by dint of his adamantine physique, as by the wonderful radiance of his intellect and the marvellous magnetism of his spirituality serve as a model for that hankering humanity, which is impatient to press its pace in fields alike of politics, scientific physical truth and of religion.

XIV.

THE EDUCATIONIST.

Dayananda wanted to reform humanity at its source. He was conscious that the future of the nations is budding in the hearts of their young hopefuls. In order that the reform you make may be permanent, plant your spirit in the hearts of the future citizens of the commonwealth. Spare not the youth. They will help you in moulding the character of the generations to come. To give the hearts of youngsters the trend you will, their immediate elders are a powerful influence. Utilise them therefore, as an influence, but your main hopes should be centred in the citizens that are to be. Look for the fruits of your efforts from generations yet unborn. It is to this end that Dayananda has devoted many chapters of his books to the question of education. To this topic he reverts every now and then. Young children appear to occupy a very tender corner in his affectionate heart.

He started a school or two, but finding the attempt premature and therefore at the time futile, had to close them down. The atmosphere in which seminaries to his heart could flourish was yet to be created. The boys of the day were not fit to be received in schools of his designing. Nor were teachers available, to whom the sacred charge of the fulfilment of his mission could be entrusted.

Education, as Dayananda would have it, begins from the mother's womb. Preparations have to be made long, even before conception, to make that womb a fit receptable for a worthy and promising soul. For, according to the *Aryan Shastras* the character of the *atma* that enters a mother's womb depends on the character of the mother. Your invocation, the spirit that characterises your *prana-pratishtha*, determines the grade of the deity that will, with its presence enliven the idol. For long months the aspiring parents remain in close commune, paving by their sound moral musings the way for the advent of a blissful beneficent soul. The more carefully they observe the injunctions of the *shastras* in this respect, the more confident they can be of having a sound, worthy progeny. Their concern increases, as the expected boon is vouchsafed. During the whole period of pregnancy the mother has to be on her guard against all sorts of mishaps. An unworthy idea of the

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mother may mar the mind of the child for life, and be carried perchance also to the generations that are to come after him. For five years the chap is nursed and trained by the mother. He learns the alphabet with her. Without overburdening his brain, an attempt is made to stuff his mind with wholesome maxims, and easy verses, full of useful instruction. During early years the memory of a child is very keen and retentive. Unless you give it something salubrious to retain, it will run after questionable matter—some street slang or filthy abuse.

Before the age of eight the child should go to school. This should be a compulsory duty, for the performance of which the parents of both boys and girls should be responsible under the laws of the state. Every attempt should be made to give all children of the land the advantage of a second birth, as the authors of *Arya Shastras* delight in terming the process of acquiring education under a *guru*. A child, found naturally unfit to be taught, can alone be excused. To such are entrusted the duties of a *Shudra*, menial servant. Any the highest lineage should not exempt him from being so classed. For in the interests of society conventional privileges of individuals have of necessity to be sacrificed.

According to Dayananda's scheme —and that scheme, was formulated in conformity with principles enunciated by the ancient *rshis*—schools, whether of girls or of boys, have to be located at a distance from townships and cities. Considerations not only of health, but also of the moral welfare of the student community render this recommendation necessary. For the cultivation of a spirit of learning and meditation, solitary seclusion is essential, a factor that towns can not by their very nature provide. Every little ripple that disturbs the stream of the outer communal life has its influence on the inner flow of the institutions that have their being in it. The noise and bustle which is in the essence of town life can not but be detrimental to the pursuit of studies.

Man learns principally from nature. In the present industrial age, the opportunities of direct contact with the virgin beauties of nature are, if any but few. However prosaic the mind of the mechanical man of today may have become, the poetry that is inherent in the grand and glorious scenes of the everyday phenomena of nature appeals to it with an irresistible force. In fact it is by that poetry that the inner workings of the spirit are, in various persons, directed into their various channels. Lest later life should shut out this chance of direct vision of God with his glories, it is but befitting that the early years be passed in the open, amidst scenes of immaculate joy, of unsophisticated bliss.

Till at least the ages of 24 and 16 respectively, the boys and girls live within such surroundings. The academies are all residential and the relation between the teachers and the taught is personal. In the treatment meted out to the latter, in the matter especially of their physical wants, strict equality is observed, so that differences of birth and of the pecuniary and social position of their parents are effaced, and a spirit of *esprit de-*

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corps is cultivated by a continued life of willing co-operation and self-reliant inter-dependence. Contempt of poverty, and with it the spirit of self-important superciliousness seeking to dwarf the capabilities of those born only in different circumstances from one's self, a common feature of the artificial system of society of today, is by the very nature of these democratic schools, ruled out of their corporate scholarly life.

The function of education is to fit up the pupils for the varied role that waits them in the civic life of the community. The old four-fold division into classes—a division that every state of society has perforce to observe, whether consciously and with deliberate endeavour to make it efficient in its working or let it drift and shape itself according to circumstances is the problem before the reformer—has to be borne in mind. The present ills of nations, arising out of an inequitable distribution of nature's goods, can be cured, says the *rshi*, by the introduction anew of the now antiquated system of *varnas*. Only, you have to establish that system on a basis of righteousness. Individual merit, and not privileges of birth and inherited means, determine the occupation, and with it the social status, of a man or a woman.

Dayananda entrusts the determination of the class, mistermed caste, to which a pupil shall belong, to the corporation of teachers that have taught him. On this distribution of offices in the communal life hangs, as on a hinge, the future of the whole society. The executive body of the state, Rajya Sabha, gives only official sanction to the decree of the preceptors. From this the reader may imagine what great dignity attaches to the office of teacher. He decides by what means the future citizens of the country will earn their bread and what, in consequence, shall be their place in society. The treatment they will receive at the hands of their fellow-citizens, in fact their whole destiny as members of the human race, is bound up with the occupation which will give them their living, and that occupation, as we have said, is determined by the teachers.

Dayananda set his face absolutely against co-education of the sexes. Apart from moral considerations, which should dominate in the decision of matters involving continual accompaniment of the sexes, there are also educational and economic drawbacks in yoking persons of different sexes together. To one sex nature allots a longer period for studies than to the other, inasmuch as puberty makes its onests felt among males considerably later than among females. The task, again, assigned to the tender sex is that of mother. A considerable portion of the life of woman is taken up by the duties of maternity which confines them to their home, while men are all the time free to roam where they will. Providence, it appears, has assigned the winning of bread to man, and the management of the household to woman. Such being their respective role in the economy of the community and the household, it is but meet that their training for that role be different. Discrepancies of natural temperament and constitutional make, both physical and mental, point to the same conclusion as regards the arrangement, joint or separate, for their education.

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Of languages, Dayananda would begin with the mother-tongue of the pupil, the alphabet of which he would teach him in the mother's lap. Gradually as the instruction of the lad or lass progresses, a knowledge of other languages may, at the proper stage, be added. The medium of instruction can be no other than the mother-tongue. In the syllabus, too, the mother-tongue will, of necessity, be allotted, among languages, the place of honour. While other forms of speech serve some commercial or literary or scientific purpose, a purpose at best secondary, the purpose of the mother tongue is, first and foremost, spiritual—it helps the unfolding of the soul. Mastery of one's own tongue is a perpetual joy, a joy on which the spirit may turn at any time and in any clime. The mother-tongue embodies the evolution of the race to which the individual belongs. It is the spiritual heritage of the nation which none but a bastardly offspring can forego.

For the benefit of beginners Dayananda got a few primers compiled. One of these is *Vyavhar Bhanu*, a mine of sound moral instruction. Another is *Sanskrit Vakya Prabodha*. This latter is a series of conversations on ordinary topics of daily talk. The compilation of this book unmistakably shows that the method that Dayananda would himself adopt for the teaching of a language was conversational, and that the knowledge that he would like his pupils to acquire first was practical, *viz.*, that which should help them in conducting their every day business of life. Book-lore he would add later as an embellishment.

Dayánánda, it is objected, was very fond of Grammar. Well versed in that branch of literature himself, he would place grammar in the beginning of every course of studies that he formulated. In this he differed from modern educationists. As we have pointed out above, his own first treatises written for the use of boys and girls embody a number of dialogues, showing that he would himself teach language by means of language. The *Sutras of Vyakaran* that he would at the same time stuff into the brains of his disciples were to be at the first stage a supplementary study. The case of Sanskrit differs in one respect from all other modern languages. Grammar in those languages does not even approach the exactitude and what may almost be called comprehensive completeness of Sanskrit Grammar. In Sanskrit, grammar is a science. It is by itself a study that should absorb the attention of the pupil if he be resolved to pursue it to the end of its abstract speculations, which latter are some very interesting theories. To Dayananda the paramount necessity of his age appeared to be that of the study of the Veda, in which the misunderstanding of merely a *svara* or tone would cause a misunderstanding of the meaning of the verse. In the modern age when Vedic idiom is almost obsolete, the thread of correct Vedic learning can be caught again by acquiring a mastery of the *sutras* of Panini. When knowledge of the Veda has become common, then there may be time for reading the Veda, as a part, by far the most important part though, of literature. Then perhaps scholars, acquainted by daily perusals and discussions with the shades of meaning of the Vedic diction and idiom, may find it practicable to dispense with Grammar as a preliminary to the study of the Veda.

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An incident from the life of the sage, illustrating what his behaviour towards his pupils would be if he had the opportunity of assuming the role of a teacher will be a fitting close to the present 'Glimpse' from his variedly, and in every phase profusely, instructive career. In a *pathshala* established by him, a wall of a room had fallen and the boys were exposed on that account to all inclemencies of weather. Coming in the course of a tour to visit that academy he perceived the inconvenience of the pupils and forthwith ordering a thatch to be brought proceeded with his own hands to set up a wall of straw. Never disdaining labour, he was today prompted to it with redoubled impetus by the consuming love of *brahmacharis* which to him as a *balbrahmachari* was a passion of his life.

THE WORLD OF BOOKS.

The New Japan. By James H. Cousins. Published by Ganesh and Co. Madras. Price Rs. 4.

The author is a well-known Irish poet and writer. His previous writings have already met with appreciative reception. For some time he was Professor at the University of Tokio. Through a poet of Japan, with whom he had formed his friendship, before he set his foot on Japanese soil, he had unique opportunities of studying the inner life of Japan. While living among the Japanese he tried to become one of them. He adopted their ways and lived quite in the native style. The experiences he thus gained he has published in the form of a book. His keen insight into humanity, and his sympathetic outlook on the ways of people of all lands and all countries, of which the lands of the East appear to have special fascination for him, are writ large on every page of the volume. And he has got to say much which should prove enlightening to all other peoples. How though by profession Budhists, the Japanese have become meat-eaters, so that at a certain party which Cousins attended, he seemed to himself to be the only Budhist present, how western civilisation which the Land of the Rising Sun has been importing wholesale, has changed the whole face of Japan, so that Cousins finds instead of one country many varieties of Japan in the present Nippon; has been mentioned with due pathos. Japanese love of art finds vent in the numerous species of flowers they sow and the designs in paper they make of all sorts of articles they require for daily use. At present there is taking place a fusion of Eastern and Western arts, leading according to Cousins to a happy consummation. So anxious are the Japanese for the preservation of what they regard to be beautiful, so profound is their innate veneration for what pleases the eye, no matter whether it is nature's art or a product of human artifice that even children will not harm the paper lanterns they hang out on some festive occasions, which you may find in their original place and posture till many days afterwards. The outer surface alone—things as they seem—appeals tothe Japanese intellect, not the spiritual designing that

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is hidden behind the surface. For that would require an effort of inner reflection, of which the Japanese is strangely incapable. Your Browning and Tagore are a very hard nut for the Japanese boy to crack. Teach him poetry that deals with figures and objects—poetry that he can visualise, and that he will instantaneously enjoy.

The change from India to Japan was for Cousins a very sudden one. While physically residence in the former country prepared him for his life in the latter, so that he could easily dispense with chairs, etc. and accomodate himself without inconvenience to life on the floor, the politically dependent state of India, with its necessary concomitant, a slave-mentality among the people, made the contrast which the absolute freedom of Japan presented to the state of things here, striking and difficult to adapt one's self to. He expected *salams* from the constables, and to do penance for the unworthy wish, went to ask of one an unnecessary question, for which he had, according to the usage of the country, to make a bow. The book in short is interesting and will much interest the reader.

The Cage of Gold. By Sita Chatterjee. Translated into English by A.E. Brown, M. A., Principal Wesleyan College, Bankura. Published by R. Chatterjee 210—3—1 Cornwallis Street, Calcutta.

The story told in this book of just 200 pages is a simple and interesting one. The plot is judiciously laid and there is not a single redundant scene. The heroine of the story is Urmila, the daughter of a woman who had married according to her independent wish, and was murdered by the capricious husband she had chosen for herself. A lover of her mother somehow took hold of the child and brought her up in the solitude of his wealth-bedecked mansion. He left a will, by means of which he settled on her a property of a very high value. To his gift, however, he attached a condition that she should marry a husband whom he named and appointed in the wish. Till the marriage she was to live in the house of a Brahmo friend of his. The girl in the meantime developed affection for the son of her new guardian, in whose company she now spent her days. She was thus placed on the horns of a dilemma. On one side there was vast wealth and the prospect of a life tied up with one whom she did not love. On the other side was a young man of ordinary means who offered her his heart-he perhaps was divinely appointed to be her mate. The struggle was hard and long, but at last the right bid was made. The decision of the maiden is announced on the last page, so that the interest of the story is kept up to the end. One misses the dexterous unfolding of mysterious and complicated working of lovers' minds met with in novels by master hands. The design of the writer of this novel appears to be simpler, and as such has been well executed. The get-up of the book is beautiful and the printing neat and correct.

आसन—*By P. Satvalekar. Published by Swadhyaya Mandal, Aundh, Dist. Satara. Price Rs. 2.*

The book, as its name indicates, sets out a number of postures of the body, which, besides other benefits claimed for them by those that know, con-

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stitute a useful system of exercise. They require no apparatus and are therefore very cheap, costing absolutely nothing to perform. P. Satvalekar has, as is his habit, systematised them. A speciality of this system is that it develops both nerves and muscles and yet does not stiffen the limbs. On the contrary it makes all the limbs elastic. In certain diseases also, some of the *asanas* have been found of great benefit.

वैदिक धर्म की विशेषता—*By the same author Price as. 8.*

The author in this booklet quotes, as is his wont, Vedic verses to show that the religion of the Veda is all-sided. It takes into consideration all phases of human life viz., physical, political, social and spiritual. This is its distinctive feature which marks it out from other religions.

EDITORIAL REFLECTIONS.

THE LEADERS' MANIFESTO.

A declaration signed by a hundred leaders, including Hindus, Mohammadans, and Sikhs has for the last few days been going the round of the press. The manifest object of it is to emphasise the duty of keeping civic peace, which every religion, if it does not belie the sacred epithet 'religion', the halo of which it wears and is on account of it held in reverent esteem, ought to and does, as it seems to us, in fact, teach. The manifesto runs :—

In view of the recent deplorable disturbances we the undersigned Musalmans, Hindus and Sikhs hereby declare, that if any individual or group of individuals, belonging to any community commits any act of violence against, or attacks the person, property or honour of, women or places of worship (mandir, mosque, church or gurudwara, etc.) of his neighbours or fellow townsmen or helps those who indulge in such misdeeds, he is, from the religious point of view, guilty of a great sin ; and that it is the duty of co-religionists of such offenders to stand up to resist these miscreants and to protect those who are so attacked. We further appeal to the followers of every religion that they should act, each towards the other, with mutual toleration and regard for the religious ideas of their neighbours and townsmen.

The truth enunciated in the above lines should be patent to men even of the most ordinary intelligence. The professed object of religion is to make men divine. The brute in human beings it is the professed aim of every religion to suppress and kill. If religion ranges men on opposite sides, and arms them with weapons other than those of the spirit, it stultfies its own purpose. There are occasions when it becomes necessary to shed human blood. For instance, when the honor of women has been outraged, no matter of what religion and race those women are, or when the opponent is guilty of aggression, from which there is no way of escape except through force of arms, or when liberty of thought and action in matters especially with which is bound up the spiritual welfare

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of human beings, is in danger, on such occasions it is sheer cowardice to recede from sanguinary fight, provided all other means of averting the bastardly tyranny have been tried and failed. The Arya community never took up arms to blot out differences of religious opinion. Of metaphysical speculation there has been a good deal among thinkers of this community itself. It is on account of this very religious freedom to which there was, in the past, no check among the Aryans that the sublime flights of philosophy, in which the Indians of today rightfully take delightful pride, have been possible. Indian genius became barren when as a result of the contact with other cultures the tyrannous practice of stifling independent philosophic opinion was adopted by the people of India. Annals of both Rajput and Maratha kingdoms abound with instances of manly chivalry practised by members of these clans in the event both of victory and defeat. Not a single mosque was demolished by the Arya conquerors. Not a single copy of the Koran was desecrated. Not a single woman was offered insult for the reason that she was Mohammedan. With what parental care Durgadas brought up Safiat-ul-Nasa, the granddaughter of Aurangzeb during the tender days of her wardship with him, how he managed to teach her the Koran, while treatment quite the opposite of this was meted out by Aurangzeb to the heir-apparent of the Rajput throne, forms a glorious chapter of Rajput history. Even today it is a matter of well-merited pride to the leonine Lala of the Panjab that his co-religionists have during the inter-communal skirmishes that took place in various parts of the country refrained from making attack on female honor a legitimate game in war factics. The old spirit of chivalry towards women even of a hostile community yet lives. It is quite in conformity with Aryan traditions that Gandhi, one of the pick of his community, has celebrated the marriage of a female Mohammedan ward of his as if the girl were his own child.

If Mohammadans—not the leaders only but the rank and file also—were to imbibe the fine spirit embodied in the manifesto all ignoble strifes between the communities that disfigure the contemporary history of India, and to us appear to be a great impediment in the way of Indian self-rule, should cease. The Hindus are already practisting the golden virtue of self-restraint sought to be inculcated in the leaders' manifesto and if Hindu leaders have put their signatures to it, it is out of courtesy to their Mohammedan com-patriots. The sentiment at work behind this joint declaration is that of a desire to cloak the exclusive character of the criminal habits of one of the communities. We wish our brethren of Islam should appreciate this feeling and make a befitting response to it.

The difficulty with the rowdies among Mohammadans is that some of the Mullas of that community whose influence with the masses is great have a very perverse idea of the injunctions of their religion under this head. Maulana Abdul Bari, a few days ago, issued a *Futwa* or what we regard as such, that in his opinion the right to

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disseminate his faith was a special privilege of the Mohammadan and that with a renegade from that religion he could never be at peace, though with a scorpion or a snake he might. Khwaja Hasan Nizami, another alumnus of the Arab creed has been seeking aid of his allen sisters, the pr stitutes, to help in the spread of Islam through their inglorious profession. As one comes across such ignoble writings which to us seem to e the travesty of religion, one feels tempted to strike off the name of Islam from the sacred catalogue of religions. For religion, as we understannd it, is a word with holy associations, a word which, as it is uttered, arouses feelings of profound veneration and regard.

It is our sincere wish that the Mohammadan signatories to the above manifesto should take courage into both hands and declare peaceful *Jihad* with the other section whose sole aim is to tarnish the fair name of their religion. We doubt if the name is yet fair. It should infinitely appease us if the real exponents of Islam should be these enlightened souls of balanced minds and not the perverse followers of Abdul Bari and Hasan Nizami.

What appals us most is the dreadful prospect of a revengeful resolve that Hindus in some parts of the country are inwardly forming of returning a blow for a blow and meeting an atrocity with a like atrocity. The future of the Arya race hangs in the balance. The Hindu, brought to sore straits that he is, may bid farewel to the glorious traditions of his ancestors, and be prompted by a spirit of triumphant revenge to defile the shrines of the Musalman, and what is more terrible to contemplate, make ignoble discriminations in his observance of rules of chivalry towards his sisters of his own, and those of his opponent's, faith.

The manifesto comes not a minute too early. That it has the salubrious effect which it is intended to make, will be judged by the future attitude of Mohammadans to their com-patriots of other communities. The prospect at present is gloomy.

A FANCIFUL COMMENTARY ON A LINE OF VALMIKI.

Some say, Shakespeare never intended to put into his lines the meanings that commentators of later days have read into them. Could Valmiki have intended to signify by a line of his what Mr. T. V. Krishnaswami Rao makes that line signify in his "Half Hours with Valmiki" appearing in *the Kalpaka*.

The fancy of the writer has suggested some twenty simultaneous ideas that Sita wanted to express by a single act of hers. The reader will find these ideas an interesting reading.

'Thrinam Antharathah Krithva prathyuvacha Suchismitha,.

तृणमन्तरतः कृत्वा प्रत्युवाच शुचिस्मिता ।

('Sita) maintaining her usual smile, laid a piece of grass on the ground (before the advancing Ravana) and (with her eyes turned towards it) spoke to him thus.'

Maintaining her usual smile.

1. She pitied him for his one great weakness that hopelessly marred the brightness of the many brilliant qualities he possessed.

2. She doubted if a woman-stealer like him would ever think of facing the enemy in the open field.

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3. She laughed at his ignorance of the eternal law of nature 'They that sow wickedness reap the same.'

'Laid a piece of grass.'

1. To offer a seat to guest is the primary duty of a host's attention; and Sita unable to procure a finished mat offers him a single blade of grass to sit on, requesting him to accept the will for the deed.

2. She thought that he would leave her alone, if she paid him the court esyof a subject to the sovereign and offered him a seat accordingly.

3. She created a partition between her persecutor and herself by throwing a piece of grass before the advancing Ravana.

4. Being forbidden by religious laws to have any direct converation with a stranger, she began to address him looking at the blade of grass.

5. She wanted to create an impression n his mind that the inanimate stuff on he ground could be more easily converted into a human being endowed with human intelligence than the thick-headed master standing in front of her.

6. She seemed to tell Ravana that he had forfeited his claim to the realm of human beings, and as such he had like an animal to live upon grass alone in future.

7. She warned him that, even like a piece of grass he would fall an easy prey to the fury of the elements.

8. She made him understand that all his riches and powers were but a trash to her.

9. She appeared to tell Ravana that the grass piece at least possessed better qualities, inasmuch it had no such thing as jealousy, anger etc.

10. She asked him to acknowledge his defeat at the hands of the arch-wrestler Rama by 'biting the grass'

11. She reminded him of the presence of the All-powerful even in the tiny grass piece, who would not hesitate to make his appearance therefrom in the same way as he came out from a stone pillar in the form of Man-lion (Narasimha) and rescued the youngster Prahlada from his tormentor Hiranyakasipu.

12. She swore upon the grass that Rama would surely take away his life for all his misdeeds.

13. She threatened to reduce him by a curse to a blade of grass.

14. She warned him that she would plunge the grass bit in his eyes even as Mahavishnu pierced the eyes of Sukracharya when he offered resistance to him in his dealings with Mahabali.

15. She gave him to understand that Rama was able to pierce the eyes of a demon (Kakasura) with an ordinary piece of grass and it would not be long before he used the very same weapon even in his case.

16. She seemed to infuse the fire or chastity into the little thing the potency of which could in a moment burn all the seven worlds.

17. She appeared to say that she would cut him down into so many pieces like the one on the ground.

18. She made him understand that she considered her life as trash wherein her honour was concerned.

19. She exhorted him to remember the use of grass as an essential material in the making of a hut, for ere long his kingdom was going to be reduced to ashes by Rama with no trace of any dwelling place at all.

20. She expected that by her determination not to look at him, he could understand her mind and leave her alone.

A HUMANE SLAUGHTERING DEVICE.

The Mohammadan reads his *takbir* when killing his food-animal, while

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the Sikh sticks to his *jhatka*. And western science, and with it western humane feeling, is dissatisfied with either of these methods of disposing of the animal. Here is an extract from *Our Dumb Animals* delineating a new device and the success it has met with :—

The National Committee on Slaughter-house Reform, with a Committee from the American S. P. C. A., of New York, (the Society that offered the Ten-Thousand Dollar Prize for a humane slaughtering device) visited Omaha, Nebraska, recently to witness a demonstration of killing cattle, sheep, and swine by electricity. This visit was made upon the invitation of one of the large packing-houses of the country, a concern having 26 different abattoirs in the United States. The experiment was being made with electricity because a member of the firm had been shocked at seeing an employee of the company strike a steer 26 times before he destroyed it. "This is horrible," he said " we must find some better method."

Before the Committees made the visit they asked, " Does your method of killing by electricity render the animal instantly unconscious?" Is it wholly painless?" "Is there any possibility of returning to consciousness before the use of the knife?" To the first two questions the answer was "Yes"; to the last "No." This was difficult for us to believe, for we had had the best authority for stating that animals stunned by electricity would not bleed out properly and so the meat from their carcases would not keep.

What did we find ? The Company, sincerely working for a humaner method than the hit-or-miss one of the knocking-hammer, had discovered that an animal shocked with a high voltage would not bleed out, and that therefore, the meat would not keep a sufficiently long time to answer commercial purposes. They had then reduced the voltage to something like 400 or less and found that the animal dropped, became motionless, could easily be hoisted up and bled, and that the blood flowed freely.

But what about the animal meanwhile? It was suffering torture, if the testimony of human beings so shocked is to be believed. There could be no doubt of it. We had with us as one of the Committee of the American S. P. C. A. the president of the New York State Veterinary Association, a thoroughly trained scientific veterinarian, who examined animal after animal and found that, while the current did produce more or less effectively *motor* paralysis, it did not produce paralysis of the *sensory* portion of the cerebrum or fore-brain, which controls the sense of feeling, as was manifested in the remaining reflexes of the eye and eyelids of the animal several minutes after being shocked.

To lie upon the slaughter floor, to be hoisted, and to have the throat cut, while powerless to move but still keenly alive to pain, is a horror one vainly tries to imagine.

And what about this suffering? Innumerable witnesses who have experienced these shocks which did not kill affirm that the agony endured untill the current is shut off or they loose consciousness is beyond description. We talked recently with an expert electrician who was caught by a low voltage current and held for some short time who said, " No words can portray what I suffered. My eyes seemed as if they would leap out of their sockets, my heart appeared to stop, I could not breathe, my chest felt as if it was on fire, I hoped I could die, then I became unconscious."

We believe this scheme of destroying our food animals by electricity is settled once and for all, that it will not be tried out again in the light of what was demonstrated at Omaha. Our hope is that the report of the device to be given practical test in Chicago, and of which we wrote in our last issue, will be a very different one.

A Bill with some similarly humane object was thrown out the other day

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by the British Parliament, because the Jewish population of the British Isles would not allow deviation from the time-honored Mosaic practice. *The London Morning Post* has the following comment on this, to it unpalatable, event :—

"The Jewish practice, which follows what may be called the Mosaic ritual, is to cut the animal's throat and leave it to bleed to death ; and to preserve this practice Jewish influence is exerted to prevent any change in the law, as applied even to Gentile slaughter-houses. For although the Jews insist on their own ritual, they do not provide their own slaughter-houses. They cause to be killed many more animals than they consume, and it is estimated that at least 70 per cent of the slaughtering in the Islington abattoirs is done in the Jewish method, under which an animal may retain consciousness for some minutes after its throat has been cut. The very moderate Bill which was moved yesterday would not prohibit the Jewish method, but would give the Minister of Health power to grant special exemptions, from the general law in approved cases ; which means that if the Jews cared to establish and maintain their own abattoirs, they would be at liberty to do so, but that the country generally would be redmeemed from the reproach of a tribal barbarism. If the Jewish community insisted on its own methods for its own people, there would be less to be said of its attitude to this question ; but that it should obstruct reform as relating to the non-Jewish population is intolerable. The Bill, on which all parties—and all interests except that of Jewery—are agreed, could be passed in ten minutes but for this selfish and sectional opposition. It is a scandal that a measure of simple humanity should be held up in this way in the interests of a fractional section of the community."

That a feeling of humanity towards animals has begun to stir, or let us say disturb, western hearts is welcome. The way, however, to carry the holy wish into practice is vegetarianism enjoined by the Arya *shastras*, and not the doubtful half-way methods of diminishing the torture at the time of killing.

BUDDHA ON CHRISTIAN CALENDAR.

B. P. Wadia, writing to *Orient*, has the following remarks as regards the inclusion of Budha among Christian saints :—

(Dr. de Filippi) spoke of the many parallels between the Buddhist and Christian faiths, and finally startled his audience by boldly declaring that Guatama Buddha is to be found in the Roman Catholic Calendar of Saints under the name of St. Giosofatte, or Josophat, venerated on the 27th of November, and that story of Barlaam and Josophat is really the story of the young Buddha and the holy man who showed him the signs fo suffering, age and death.

This religious romance called "*The History of Barlaam and Josophat*" was for several hundred years one of the most popular works in the whole of Christendom, and was translated into every European tongue, including the Icelandic. It has been used by Catholic missionaries with the greatest success, and has furnished many of the early playwrights with material for their miracle plays, no lesser lights than Boccaccio and Shakespeare having been lured by its romantic possibilities.

We find this Christian story first appearing in Greek among the works of John of Damascus, a theologian who lived in the first part of the eighth century, and by peering a little into the life of the man before he was made a saint both in the Greek and Latin Churches, we find the possible clue to the mystery of how the Buddha became a Christian Saint. For this St. John held a high office at the

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court of the Caliph Abu Jafar al-Mansur, as did his father before him. Here he seems to have heard the story of Guatama Siddharta, the Buddha, and after his adoption of the monastic life he could easily have adapted the story, changing the names to suit the new dispensation. The story, roughly sketched, is as follows:

After the conversion of the people of India by St. Thomas, a powerful pagan king, Abenner by name, began a persecution of the Christians. To this king was born a son, matchless in beauty, thoughtful and devout in character, to whom was given the name Josophat. After the prediction of an astrologer that the kingdom of the young prince would not be the paternal kingdom, but another infinitely more exalted, the king causes a palace to be built where his son should live, surrounded only by tutors and servants in the flower of youth and health. Here the young prince was to be kept free from contact with poverty, disease, old age or death, so that no inducement would be found to tempt him into the outside world, and so that no word of Christ and His religion would ever penetrate into his seclusion.

Here the young Prince Josophat passes his youth. But one day, through neglect of orders, he goes outside the palace gates, and encounters a leper and a blind man. In astonishment he asks his attendants what such things mean. They tell him with reluctance that these are ills to which the flesh is heir. On another occasion he meets old age, and contacts death. Again the questions—is this the fate of man, is there no way of escape? He goes home with these questions in his heart, seeking for an answer.

At this time Barlaam, a hermit of great sanctity and knowledge, gains access to the young prince, to whom he imparts the Christian doctrines and commends the monastic life. Suspicion arises and Barlaam departs. But all attempts to shake the young prince's convictions fail. At length Josophat renounces his kingdom and departs for the wilderness, and after many years of wandering finds his old friend Barlaam again. After the death of the latter, Josophat survives as a hermit for many years. After his death, the two bodies are transferred to India, where they are the source of many miracles.

It will be seen by the most casual observer that this story agrees, not only in broad outline but in essential details as well, with the well-known story of Guatama the Buddha.

Further than that, the word *Josophat* (which in Arabic is *Yudasatf*) is a corruption of *Bodisat*, due to a confusion between the Arabic letters for Y and B, and it is well known that Bodisat is a common title for the Buddha.

The identity of these two stories have embarrassed many of the Christian ecclesiastics, and we hear Dominie Valentyn complaining: "There be some who hold this Budhum for a fugitive Syrian Jew, others for a disciple of the Apostle Thomas; but how in that case he could have been born 622 years before Christ I leave them to explain!" Later we find the historian of Portuguese India, Diogo do Couto, telling us of his travels in the Isle of Salsette, where he saw the pagoda called the Canara (Kanhari Caves) made in a mountain with many halls cut out of the solid rock. Here he inquired of an old man as to who had done this work, and was informed that without doubt the work was done by the order of the father of St. Josophat, so that the young prince could be brought up in seclusion. The historian continues: "And as the story informs us that he (Josophat) was the son of a great king in India, it may be well. . . . that he was the Budao . . ."

Since the days of John of Damascus, the heroes of his story have attained saintly rank, as Petrus de Natalibus included them in his Catalogue of the Saints, and Cardinal Baronius inserted them in his Martyrologium, authorized by Sixtus the Fifth under the date of the

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27th of November. In the Orthodox Eastern Church "the holy Joseph, son of Abener, king of India" is allotted the 26th of August, and in Palermo a church dedicated to this same saint exists.

Here we can do no better than to quote the words of Prof. Max Mueller:

"Whatever we may think of the sanctity of the saints, let those who doubt the right of Buddha to a place among them, read the story of his life as it is told in the Buddhistical canon. If he lived the life that is there described, few saints have a better claim to the title than Buddha; and no one in the Greek or the Roman Church need be ashamed of having paid to his memory the honour that was intended for St. Josophat, the prince, the hermit and the saint."

APOLOGIA FOR MOHAMMADAN POLYGAMY.

It is a happy sign of the times that Mohammadans, especially those that are enlightened among them and have a broader outlook on religion than that of the ecclesiastic zealot, are seeing the defects of the institution of polygamy in Islam, and instead of upholding the doctrine, are finding pretexts for the permission of more than one marriage ties at the time when the Prophet lived. Says H. A. Noureddin Addis in an article contributed to the above journal:—

In Arabia, during the early days of Islam, polygamy performed a mission of inestimable worth to the Muslim people. Previous to the time of the Prophet civil warfare among the Arab tribes had so greatly reduced the male population that among this primitive and barbarous people it was considered the proper procedure to put to death new-born girl babies. This had grown to be a custom, dictated doubtless by what seemed to them good and sufficient reasons,—viz., the vast outnumbering of Arab men by Arab women. It was among the pre-Islamic Arabs that the savage saying gained currency: "The grave is the best son in-law."

Then again, at this time in Arabia the usual sexual relation was the free-union. It was a condition of free-love in its most repulsive aspect, wherein the position of the female was little, if any better, than that of a prostitute. Thus it was that the first task confronting the new faith was to ameliorate this condition and give the woman and her child both legal and social status.

Muslim polygamy, then, among these people meant that as many as four women could be rescued from this state of degradation and misery and elevated to the rank of wife by one man; thus saving their children, if not from a violent death, at any rate from the evils and miseries resulting from the absence of all civil rights. Monogamy alone, in this society where the female outnumbered the male population so vastly, would have been totally inadequate to work the redemption of woman as did a reasoned polygamy during the early years of Islam.

The early Imams (commentators on the Islamic doctrines) soon subordinated the practise of polygamy to such variety of onerous restrictions as in reality to interdict it. Aside from this the Quran and Hadis (Traditions) are replete with texts extolling the pleasures and virtues of the monogamic state; thus indicating it as an ideal system, not then wholly practicable. In his History of the Saracens Seyyid Ameer Ali says: "The Arabian Prophet, by imposing a limit to the custom indirectly forbade polygamy, but made it conformable to all stages of society." No less than six of the narrators of Traditions of the Prophet have related that he said: "He who possesses two wives, but inclines towards the one, he shall appear on the day of resurrection with half of his body muti-

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lated." The following is from the Quran: " . . . . take in marriage such other women as please you, two, or three, or four, but if ye fear that ye shall not be able to do justice to them, marry only one. . . ." Many Muslim jurists, basing their argument upon the fact that it is next to impossible for a man to possess more than one wife without feeling a preference toward one above the other or others, have held that this verse alone is sufficient to abolish polygamy.

However that may be, to the Quarnic student this fact stands out clear and distinct: In the mind of the Prophet the institution of polygamy, in opposition to monogamy, was not to be adopted except in view of certain exceptional social conditions such as those existing in Arabia during his time.

Beyond doubt polygamy is, in principle, a faulty institution.

GANDHI AND EUROPEAN CIVILIZATION.

M. Romain Rolland is now a famous name in the world literature. He is the author of the novel 'Jean Christophe' which brought him the Nobel Prize for Literature. To the French review " Europe ", he has contributed an essay on Gandhi. We make the following excerpt from quotations from it made in *the Hindu* :—

Since the time of Rousseau, the arraignment of modern civilisation has been ceaselessly made by the most libearl minds of Europe, and awakened Asia had only to search in these records of arraignment for providing itself with a formidable weapon against its invaders. Gandhi himself has not failed to do this, and his " Hindu " " Swaraj " enumerates a list of these books of denunciation, amongst which a good number is written by Englishmen themselves. But the irrefutable book is that which European civilisation has itself written in the blood of races, oppressed bled white and outraged in the name of the chief sinners: and this same thing has been the astounding revelation of the hypocrisy, the rapacity and the ferocity shamelessly displayed before the eyes of the world by the last war, called the war of civilisation ?. So great was Europe's shamelessness that she invited the peoples of Africa and Asia to see her own nudity. They have seen it and judged it too,

" The last war has shown the Satanic character of the civilisation that dominates Europe to-day. Every canon of public morality has been broken by the victors in the name of virtue. No lie has been considered too foul to be uttered. The motive behind old crimes is grossly immaterial.....Europe is not Christian. It adores Otamon.

Both in India and Japan, such thoughts have been many times expressed by even amongst those who are too prudent to expound this fact openly, this conviction is inscribed firmly in their hearts. And this is not the least ruinous consequence of the Pyrrhian Victory of 1918. Gandhi, however, had seen the true character of Western civilisation even before 1914; it had exhibited itself to him without any mask, during the 20 years of his South African life. In his " Hindu " "Swaraj" of 1908, he denounced modern civilisation as " the great evil."

Civilisation, says, Gandhi, is only that in name. It is, according to a Hindu expression, "the dark age." It makes material greatness the sole aim of life. It makes the Europeans dote upon the acquisition of wealth and enslaves them to it, deprives them of all peace and interior life, it is a hell for the weak and for the labouring classes and it undetermines the vitality of races. This satanic civilisation is bonnd to be consumed by its own fire. It is this civilisation which is the true enemy of India, more so than Englishmen themselves who are not individually evil hearted but only frantic about their civilisation beinig infected with its virus. Thus Gandhi

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combats the view of those of his compatriots who would like to draw away Englishmen from India, for making India "a civilized State", civilized in the modern sense. "This would be the nature of the tiger, without the tiger itself." Now the great and the only effort to be put forth should be directed against the civilisation of the West.

"Since thousands of years India remains unshaken" alone, in the midst of the changing currents of empires. Everything else has passed away, but India has learnt to make the conquest of mastery over self and the knowledge of happiness. It has not wished to possess machinery and great cities. The old chariot and ancient indigenous education have ensured its wisdom and its good. We have now to get back to this ancient simplicity, not by one leap, but gradually and patiently, following the examples of individual leaders.

This is the kernel of his thought and his is serious enough. It lays down the negation of Progress and also of European science. This medieval faith runs the risk of coming into clash with the volcanic movement of the human spirit and of being shattered to pieces. But it would perhaps be prudent to say not "of the human spirit" but "of one human spirit" for if one can conceive (and I do) of the symphonic unity of the universal spirit, it is made up of many voices each of which follows its own path: and our youthful West, carried away by its rhythm, does not think enough that it has not always led this symphony, that its law of progress is subject to eclipses, to contrary movements and recommencements and that the history of human civilisation is, more exactly, the history of the civilisations and not merely of one civilisation alone.

Without, however, discussing here the European dogma of Progress, and in only considering the bare fact that the actual movement of the world is contrary to the vow of Gandhi, we should not be led to suppose that the faith of Gandhi is going to be shattered. To think so would only be to misunderstand the oriental mind, Gobineau says that "the Asiatics are in all things; much more obstinate than ourselves: if necessary they wait for generations for the fulfilment of their hopes, and their ideas, even after the lapse of a such a long time, never suffer from loss of vigour or enthusiasm." Centuries cannot frighten a Hindu. Just as Gandhi is ready to welcome success for his efforts within one year, he is equally ready to wait for it for centuries together, if necessary. He does not wish to hasten time, and if time itself slackens pace, he also does the same. If he finds India insufficiently prepared to understand and practise the radical reforms which he wishes to be introduced in the land, then he knows how to adopt his course of action to possibilities. We cannot at all be astonished to hear this irreconcilable enemy of machinery say, in 1921."

"I would not deplore the disappearance of machinery but I have no hatred actually against the machines," or further "The law of complete love (without exception or restriction)" is the law of my existence. And, I do not want this law to be universally applied to all political measures which I extol.....That would be to condemn ourselves in advance to rebuffs and defeats. It would not be reasonable to expect the rabble to conform scrupulously to this law.

I am not a visionary, I claim to be a practically idealist" (11th August '20) Gandhi's description of himself is correct. He demands from men only what they can give, but he does demand from them all they can possibly give, and this is indeed a great thing in India whose people are large in numbers, in traditions and in the development of the soul. Between his people and Gandhi, from the first moment of contact, there has existed perfect harmony. and they have understood each other without any outward expression of their feelings. Gandhi knows what he can expect from them, and the people also

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know what he will demand of them. Between the two, the bond of connection is first and foremost, "Swaraj," or Home Rule for India.

"I know," "writes Gandhi, that Swaraj is the aim of the nation and not non-violence."

And he even adds the following words which really stupefy us with wonder,

"I would rather see India freed by violence than see her chained to slavery by the violence of her oppressors."

But he soon corrects himself. "This is to suppose the impossible, for violence can never free India, and Swaraj can never be attained without the forces of the soul which form the proper weapon of India the weapon of love, the force of truth, Satyagraha. Gandhi's stroke of genius consists in his having revealed to the people of India the true nature and the concealed strength of this formidable weapon.

AGNI THE SOURCE OF MATTER.

That light may be the prime cause of matter is a speculation of Sir Oliver Lodge stated at length by him in an address to a learned audience. The *rshis* of old held Agni to be a subtle form of matter. They went a step or two further, resolving Agni into Vayu and Vayu into Akasha. The tendency, however, shown by modern scientists towards finding a finer root of matter than the gross elements indicates that they are proceeding in the same direction. We reprint the following gist of the address published in *the Times*, educational supplement :—

What happens to the waste radiation in space ? The earth catches less than a two thousand millionth part of the solar radiation, and this seems to have been going on for hundreds of millions of years. The fraction we absorb is of vital importance to us ; it produces our weather, sustains the green vegetation which is the foundation of our food supply, and makes the earth habitable. Is all the rest wasted ? The radiation from many of the stars is still greater. Space is so enormous that it is no warmer, although thousands of millions of suns have been pouring out their energy for thousands of millions of years. What happens to the radiation.

These questions were raised by Sir Oliver Lodge in an address to the staff of the National Physical Laboratory, recently printed in Nature. He insisted on our right to repel the idea that so much energy was wasted. He rejected a suggestion made by Sir W, Siemens as to the possible concentration of all the radiation by total reflection at an aether boundary, on the ground that he cannot imagine an aether boundary, a physical limit to space. He has offered the extraordinarily interesting speculation that light (using the word to cover not merely visible rays but all radiations, including X-rays and other forms of short-wave radiations) somehow generates matter,

Light is known to exercise pressure, as was first shown by a little toy made by Crookes, which spun round when light fell on it. Its advancing wave-front possesses momentum, which it transmits to any obstacle that either reflects or absorbs it, And so when a wave front from any of the stars is advancing through "empty" space, may be for hundreds of years, according to the third Law of Motion—the uuiversal truth of which must be assumed until it is negatived--there must be a longitudinal stress in the stream of light, with a re-action on the source at one end and on the advancing wave-front at the other.

The source is always material, for light emanates only from a vibrating or rotating electron. But what happens at the other end, to accord with the customary experience that a line of stress always stretches from one piece of matter to the other ? When the beam reaches the earth or the matter of a comet or any other form of matter there is difficulty for the reaction in normal fashion is exercised on the resisting body. But when the advanc-

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ing end is still in free aether all that can sustain the reaction is the wave fornt itself travellig with the speed of light. According to Sir Oliver Lodge, therefore, the wave front has one of the properties of matter; it has the power of sustaining stress. The beam consists of associated electric and magnetic "vectors" (quantities with direction, length and sense), the electron consists of motions characteristicllly rotatory. These two kinds of motion may not be entirely distinct. The former must advance; the latter stays still in space. But they may be usually connected. It is known that the electron generates light; Sir Oliver Lodge suggests that light may generate an electron.

Radiation has certainly many effects on matter. It can produce the irregular movements known as heat. It can stimulate chemical change, as in photography. More recently it has been found to be capable of threwing out an electron from matter with an amount of energy that seems to depend on the quality and not on the quantity—that is to say on the wave length of the radiation and not on its intensity. Sir William Bragg has called attention to an apparent interchange between radiation and matter which is suggestive. The impact of a beta-particle (a definite piece of matter) emits X-rays; but the impact of X-rays similarly emits a beta-particle. The energy of the beta-particle and that of the one liberated, or called into existence by the X-rays, are practically identical. It seems as if the same beta-particle or electron had gone out of existence when it generated the X-rays and had been re-created in another place, the link through space being a radiation of indefinite wave-length travelling with the speed of light.

MOHAMMAD'S CONDITION DURING REVELATION.

What was Gabriel?

Who was Gabriel, spoken of by Mohammad as an angel who prompted all his revelations? Many conjectures have till now been hazarded. S. Khuda Bakhsh, writing to the Calcutta Review, so repudiates them:—

Certain it is that the attacks with which Mohamed suffered were not of the nature of epilepsy (*Cf.* Muller, *Der Islam*, p. 56, note 1). It is also very much to be doubted whether he had these attacks before his prophetic mission. I cannot accept Sprenger's assertion that Mohamed was hysterical.' The picture of the Prophet, such as we know it, with his more than twenty years of unresting activity, is certainly not a picture which corresponds to that of one suffering from neurasthenia.

We find in him that sober understanding which distinguished his fellow-tribesmen: dignity, tact and equilibrium; qualities which arr seldom found in people of morbid constitution: self-control in no small degree. Circumstances changed him from a Prophet to a Legislator and a Ruler; but for himself he sought nothing beyond the acknowledgement that he was Allah's Apostle, since this acknowledgement includes the whole of Islam. He was excitable, like every true Arab, and in the spiritual struggle which preceded his call this quality was stimulated to an extent that alarmed even himself; but that does not make him a visionary. He defends himself by the most solemn asseveration, against the charge that what he had seen was an illusion of the senses. Why should we not believe him?'

The process by which Mohammad received his first revelation is thus described:—

How did this Call present itself? Tabari, 1, 1153, has the following tradition. Abu Kuraib has related to us that Waki has said on the authority of Ali Ibn-ul-Mubarik, on the authority of Yahya Ibn Abi Kathir, who said: I asked Abu Salama as to the first that was revealed of the Qur'an. He said: the first that was revealed was "O, thou Enwrapped One" (Sura 74). I said: People say, however, that the first words revealed

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were : Read in the name of thy Lord who has created thee (Sura 96). He replied : I asked Jabir Ibn Abdullah who said : I shall only relate to thee what the messenger of God has related to us. I had retired, said the Prophet, for devotion, to Hira, and when I had finished, I came down, and lo ! I heard a voice. I looked to the right and I saw nothing, I looked to the left and I saw nothing. I looked ahead and I saw nothing. I looked backward and I saw nothing—then I lifted my head and I saw something. Then I came to Khadija and said : Wrap me up and pour water upon me. She covered me up and poured cold water upon me. Then was revealed—O thou enwrapped in thy mantle. (See note 3 to p. 3 of Rodwell's translation of the Qur'an.)

The something ' which Mohamed saw, is described in another tradition, which is also to be found in Ibn Ishaq, and which, adorned and embelished as it is with other legends, yet retains the main outline of original tradition. I borrow from it the following words put into the mouth of the Prophet : I came rushing down, out of a rock, with the determination of putting an end to my life and thereby securing peace at last. But when I was about midway I heard a voice from heaven saying, O Mohamed ! thou art the messenger of God, and I am Gabriel. I raised my head towards heaven, and I saw Gabriel in the form of a man (at prayer) He said ; O Mohamed ! thou art the Prophet of God, and I am Gabriel. I remained standing looking at him—altogether forgetting what I had resolved upon. and moved neither backward nor forward.

I began to turn my face in various directions, and indeed to whichever side I turned I saw him. Neither advancing nor retreating, I stood fixed to the ground until Khadija sent out her messenger to look for me, and the messenger came to Mekka and returned home, while I stood rooted to the spot. Then he (Gabriel) disappeared, and I returned home to my family (at the foot of Hira).

The doubt that the mental state of the prophet, as described above, was not a sound one was, entertained and expressed when an announcement of his apostleship was first made by himself. The prophet had to produce incontrovertible evidence to prove that his senses were sound during revelation, that evidence being no other than a statement on oath by God the pseudo-author of the Quran. Says S. Khudha Bakhsh:—

Two passages in the Qur'an prove that this account rests in the main on truth Sura 81, Verses 15 *et sqq.* : "And I swear by the stars of retrograde motion, which move swiftly and hide themselves away, and by the night when it cometh darkening on, and by the dawn when it clears away the darkness by its breath, that verily this is the word of an illustrious Messenger, Powerful with the Lord of the throne, of established rank, obeyed by angels, faithful also to his trust, your compatriot is not one possessed by Jinn ; *for he saw him in the clear horizon* : nor doth he keep back heaven's secrets, nor doth he teach the doctrine of a cursed Satan. "

And Sura 53, Verses 1 *et sqq* : " By the stars when they set, your compatriot erreth not, nor doth he go astray, neither speaketh he from mere impulse. Verily the Qur'an is no other than a revelation revealed to him : One terrible in power taught it him, endued with understanding. With even balance stood he, and he was in the highest point of the horizon : then came he nearer and approached closely, and was at the distance of two bows, or even closer,—and he revealed to his servant what he revealed —His heart falsified not what he saw : will ye then dispute with him as to what he saw ? "

Is there still any room for doubt that the Quran is a revelation from God and not the ravings of a mad Mohammad ?

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What, after all, was this Gabriel? Says S. Khuda Bakhsh :—

In reviewing Dr. V. Hautz's. "*Muhammeds Lehre conder offenbarung quellenmaszig untersucht*" in *theologisch tijdschrift* 1899, I wrote : "Dr. Pautz and many with him have looked upon this phenomenon as an hallucination. But the simple, straightforward manner in which this event is related in the Quran and in the tradition alike throw a great deal of doubt apon the correctness of the view set forth by Dr. Pautz. I hazarded an opinion long ago that Mohamed saw a hazy shadow of his own self, similar to the phantom seen on the 'Brocken.' If the observer finds himself between the low-standing sun and a bank of clouds he sometimes finds his own shadow projected upon the latter enormously enlarged and generally surrounded by a coloured circle which we call an aureole or a halo of glory.' It appears that Mohamed noticed this apparition early in the evening—a fact which would explain the anxiety of Khadija. It would also explain how the man who was timid by nature and who only slowly and gradually became conscious of his mission, and who was wellnigh on the point of despair as to how he was to fulfil his destiny—how, such a man, suddenly stepped courageously forward, strengthened and fixed in his innermost conviction that the voice which urged him onward to announce, with becoming dignity, the revelation of God, was the voice which came from above."

A colleague of mine to whom I had sent a copy of this article wrote to me ; "There is much to say in favour of your explanation of Mohamed's hallucination and it appears to me to be a very good account of the various versions of the story. If I still entertain any doubt it is to be ascribed to the fact that your argument fails in one important element ; namely, in the proof that such phenomena, as are observed in the misty Brocken have been observed in the sunny neighbourhood of Mekka. Perhaps such is the case in the 'land of mirage,' My doubt is due, to a certain extent, to my want of knowledge."

I regret I am unable to supply the desired element. As for the "phantom seen on the Broc'ken" (*Brokengespenst*) I find the following in Badeker:—

When the rising or setting sun stands at the same altitude as the Brocken. and on the opposite side down in the valleys mists gather which rise along the Brocken, whilst the Brocken itself, free from the mists, stands beetween the mists and the sun, the sun will throw the shadow of the Brocken, with all that may happen to be on it, on this bank of mist, on which gigantic figures are formed which soon grow smaller and smaller as the mist comes nearer or recedes further and further. The phantom is rare, and it occurs about once every month.

In the description of the hazy figure in the qur'an we find the nearest approach to the phenomenon just described. Probably this phenomenon is of extremely rare occurrence at Hira. It may also have taken place in the morning, which would better fit in with the story, according to which Mohammad saw it while wandering about in the hills after a dream that had frightened him overnight,

Mohamed could have had no idea of such optical illusion. For him what he saw was a divine phenomenon which announced to him what he had already in his heart: he was the messenge of God to his people. In great excitement he returned home. Wrap me up ! wrap me up ! he called out to Khadija and then he had one of those overpowering nervous fits with which he was henceforward attacked each time that he was supposed to have heard the voice of God in the heart. Unconscious, in this condition, he never was. The fits were the outward manifestations of inward mental struggle antecedent to spiritual revelation. No sooner was the struggle over than he recovered himself and uttered the revelation, The first rovelation in all probability is Sura 74 : O thou enwrapped in thy mantle ! Arise and warn ! And thy Lord—magnify him ! And thy raiment—purify it ! And the Abomination—flee it ! And bestow not favours that thou mayest receive again with increase ; and for thy Lord wait thou patiently.

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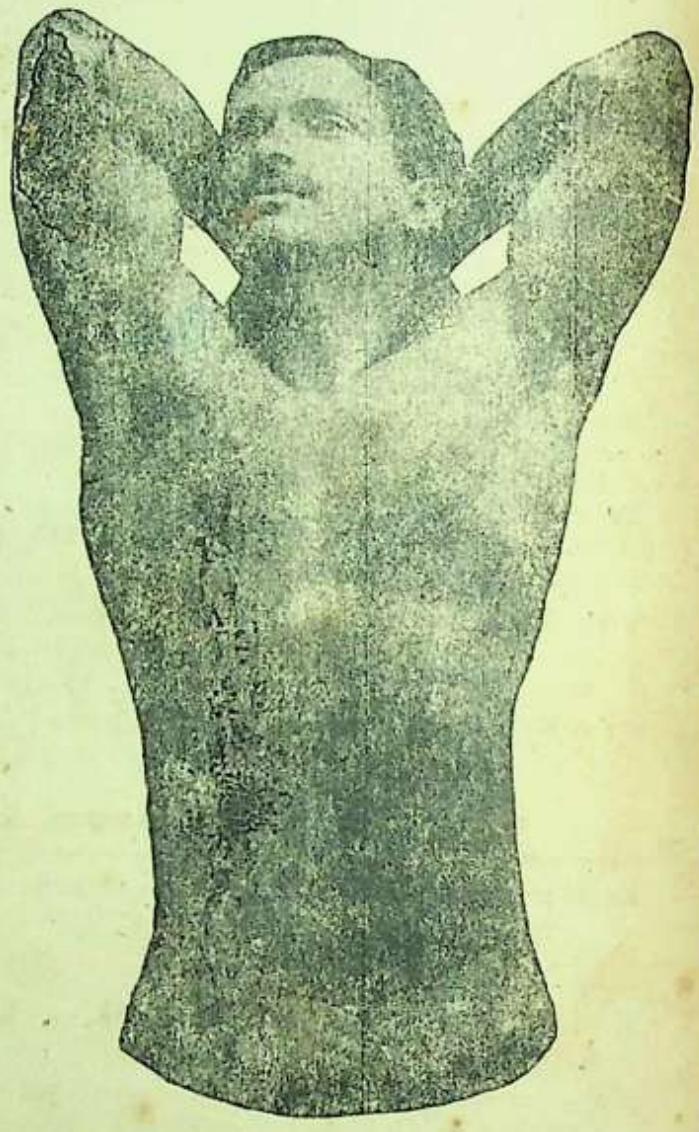

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